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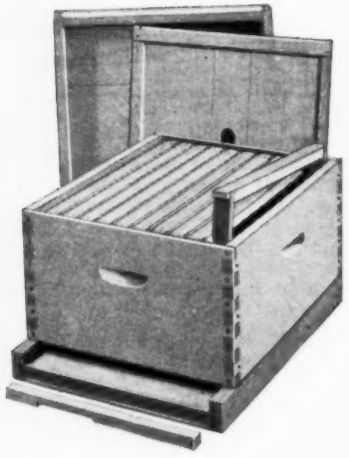
Planning Increase?



ANY commercial producer planning extensive increase for 1938 can save a lot of money by purchasing his requirements and hauling them by truck from cars arriving at our branches. In locations near to Watertown similar savings can be made. If you will need as much as 5,000 pounds weight of wooden goods or $750.00 in wooden goods and foundation together, these very close prices will please and surprise you. You can make 5,000 pounds weight, for example, out of a purchase of about 450 10-frame hive bodies with frames. This offer applies both to wooden goods packed in regular Lewis Beeware cartons or on wooden goods put up in packages to suit our convenience. The latter effects a greater saving only if we are given time to manufacture and ship after receipt of your order and have a branch car moving soon enough to meet your requirements. We will gladly submit samples and prices.

Where your order is for a sizable quantity of wooden goods and foundation together, amounting in total to $750.00 at regular retail catalog prices, a similar worth-while saving is available. This is on Dadant's regular grade of foundation in standard packages, where ordered early enough to move with our carloads from Hamilton to any of our five points.

Prices on wooden goods in other than standard packages are available only if orders are placed before our rush season. Other savings on standard packages of wooden goods and foundation are available any time when we have cars moving to our points. Our business enables us to give steady employment in our modern plant, cutting costs. We'll share these savings with you.

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American Bee Journal

Vol. LXXVIII—No. 2 Hamilton, Illinois, February, 1938 Monthly, $1.00 a year

Order Early

THE beekeeper who wants packages for early spring delivery should place his order now. Indications are that there will be a late rush of orders which will tax the resources of the shippers for prompt shipment.

It is the advance orders which give the shipper a measure of his season's business and he makes preparations accordingly. Preparation must begin weeks in advance of the time orders are to be filled. For each package to be shipped a young queen must be reared and that takes time.

Late orders are likely to result in disappointment for everybody. To the shipper because he is unprepared to handle the business quickly and to the buyer because the bees arrive too late to get ready for an early honeyflow.

To rear bees in the South, to send north to gather a season's crop of honey, requires a rather definite schedule. Queen cells must be started very early to have young queens ready for shipment to northern customers who want April delivery. Every year there are many cases of loss of a crop because of failure to receive the packages in time to get properly established ahead of the honeyflow.

If order is placed early the buyer has done his part and it is up to the shipper to have the bees ready on time.

—ABJ—

Too Much Manipulation

THE November "Bee World" discussed a paper by Prof. Zander at the German-Swiss bee meeting, in which he recommends that the brood nest be left undisturbed as far as possible.

There is entirely too much interference with the normal activities of the bees in the manipulations practiced in the average apiary. There are a few fundamental reasons for disturbing the brood nest but once these are attended to, the less manipulation the better. It is necessary to make sure that there be ample stores, that the queen be vigorous and that the colony be free from disease. Examination at proper intervals is necessary to insure proper attention to these things. When the examination is completed the combs should be replaced in the order in which they were found to avoid upsetting the rhythm of the colony. A strong colony develops along very even lines with eggs and brood associated as to age in proper order. To remove a frame of brood from one part of the brood nest and replace it elsewhere breaks

Little, Brown & Company, Boston, send us a copy of the 146th issue of "The Old Farmer's Almanac." If you are from New England or any where near it, you will be familiar with this publication, established in 1793 and continued since. Its familiar make-up is the same as ever, with the calendar of each month followed by farm suggestions, the weather, phases of the moon, zodiacal signs and quotations, and at the end, miscellaneous interesting information, eclipses for the year, morning and evening stars and their occurrence, a present day message from Secretary Wallace to the farmers of America, articles of interest to agriculture, list of the state agricultural colleges, experiment stations and county agents, poetry, anecdotes and pleasantries, then suggestions for the kitchen. Oh my! What's the use? It's all there.

And, of course, the beekeeper comes in for his share because in the Farmer's Calendar for June are suggestions for the prevention of swarming, quite a timely month for this subject.

♦

The Extension Service, of Iowa State College of Agriculture, Ames, has recently issued a valuable survey entitled, "Iowa Fruit, Vegetable and Honey Outlook for 1938." It is by Alvin E. Coons and should be read by every fruit or vegetable grower or beekeeper in Iowa.

The conclusion is that "as a consequence of this recession in industrial activity, the incomes of city consumers are likely to be a little lower in 1938 than in 1937." It further concludes that "increases in producers' incomes depend largely upon increases in consumer buying power." On the whole a rather more favorable prospect is held out for the beekeeper than for the gardener or fruit grower because of the light carry over of honey in the markets.

♦

It is surprising to find the amount of slumgum, fibre, and foreign matter, whatever it may be, in what appears to be pure, clean, white cappings. Place a quantity of cappings in a clean sugar sack and render by oven heat; notice the results. A. G. Woodman.

We have just lost over 600 colonies of bees from the overflow of the Sacramento River, the worst flood that we have had since 1916. I would say that over ten thousand colonies of bees were lost in the package shipping section of northern California during this flood.

Thos. C. Burleson,
California.

♦

In "The Bee World" for October under "Press Mirror" a statement in the September Journal by John Mavie is corrected. Mr. Mavie states that "heather honey is not obtainable outside the British Isles, and only in small areas even there." He goes on to attribute the heather honey of "parts of northern Europe" to bell heather.

According to "Press Mirror," this is contrary to the fact. "Calluna vulgaris is the principal heather of large tracts of 'northern Europe,' including Brittany, Denmark, North Germany and several other less extensive regions further south; and the honey made from it everywhere is real heather honey, with the properties we associate with that excellent article. We advise Mr. Mavie to travel to Berlin, via the Hook, Aresfoort and Rheine; when he will pass through one nearly continuous belt of heather (Calluna, not Erica) all the way after leaving the coastal region of Holland."

♦

The usual spring series of radio discussions will be given over WOI, Ames, Iowa, beginning Monday, March 14, at 12 o'clock. These discussions have been very well received by residents of Iowa and adjoining states. The object of these discussions is to present timely material on the management of bees, to keep the producers in touch with the events of state and national importance and to exchange ideas among producers. This radio presentation is one of the oldest organized series over WOI and has become a part of the literature of Iowa producers.

♦

The beekeeping course at Purdue's Agriculture Conference in January was the best in point of attendance and interest than any they have had in several years. This was due in a large measure to the high class program, headed by Prof. R. H. Kelty, that was offered and to the fact there seems to be more interest in beekeeping within the last year than has been observed in a long time. This is particularly interesting in light of the fact that last year was one of the poorest honey years we have experienced in a long time.

up this regular order and mixes brood of different ages indiscriminately.

The confusion that follows often results in an abnormal brood nest and probably costs the beekeeper something in the resulting crop.

ABJ

Changing Agriculture

CHANGES in agriculture, as in other human activities, come slowly. The most striking example of merit unrecognized is in the case of sweet clover. Accidentally introduced into this country at a very early date, it was regarded as a weed and condemned by all but the beekeepers.

Because of its attraction to the bees it was favorably regarded by the beemen although even they for a time were fearful of the consequences of its general spread. Gaining confidence they began planting it, secretly at first and later openly.

Thus did sweet clover persist in spite of general condemnation, in spite of laws classing it as a noxious weed and in spite of public disregard of its value. Even so-called authorities accepted the common reputation of the plant. A bulletin of the United States Department of Agriculture published in 1904, "Pasture, Meadow and Forage Crops of Nebraska," the very region where sweet clover has since demonstrated its greatest value, listed it among, "plants which cannot be recommended." It was stated: "The objection to its use as a forage plant in the west has been the fact that stock will not eat the plant." It was added, however, that the plant had not been sufficiently tested in Nebraska.

The coming of the World War with its feverish demand for more and more food for the armies demonstrated the need for a better soil building legume for the great plains where virgin fertility was failing. Since nothing else was available sweet clover was tried with a result which is familiar to all. In 1918 a bulletin, "Forage Crops" issued by the Nebraska Agricultural Experiment Station, recommended sweet clover as follows: "Sweet clover is the one legume which may be pastured rather satisfactorily with cattle and sheep when seeded alone. It has just come into prominence as a forage plant in Nebraska and extent of its value is not fully known. Sweet clover has an unusually wide adaptation. It thrives on both relatively wet and dry soils, fertile and infertile soil, sandy and clayey soil and both when seeded alone and when seeded in a mixture with other pasture plants."

Thus in less than twenty years did public opinion change regarding sweet clover which is now regarded as the principal legume for a very large mid-western area.

The soy bean has been cultivated in the Orient for 5000 years and was first introduced into America in 1804 but little attention was paid to it here until 1915 after the start of the World War. Now it is becoming popular and the acreage devoted to its cultivation increasing rapidly. It is estimated that five million acres are now devoted to this crop.

Changes in agricultural practices are made under pressure. Revolutionary changes took place because of the great war. Further changes have come about because of failure of markets or unfavorable economic conditions or to meet the vicissitudes of the

weather. Falling markets caused many eastern farmers to abandon the cultivation of buckwheat with disastrous results for the local beekeepers. Some took up dairying and planted alsike clover for meadow and pasture and provided more bee pasture.

The long continued series of dry seasons in the Mid-west is causing a readjustment of farm practice in many neighborhoods, the effect of which cannot as yet be estimated.

We know of a certainty that a prosperous farmer and a prosperous honey producer are likely to be found close together. Larger honey crops are likely to attend heavier fruit or seed production to the mutual advantage of both. The best time to bring promising forage crops which are good nectar yielders to the attention of the farmer, is when he is under pressure to make some change to meet changing conditions.

—ABJ—

Clover Seed Crop Short

ACCORDING to A. W. Tibbitts in the October issue of National Seedman, there is a shortage in the supply of domestic clover seed. The 1937 crop appears to be much below that of 1936 in most cases.

In the case of seed of white Dutch clover, imports for the month of August were next to the largest on record. A total of 214,000 pounds of seed was brought from foreign countries in the months of July and August.

In former years white Dutch clover was the principal source of honey in the northern markets. In recent years because of the decline in this crop and the increase in sweet clover it has largely been replaced by honey from the latter.

A decline of from one fourth to one half of the 1936 yield of red clover seed is reported. The decreased yield is credited in part to extreme drought during the summer of 1936 which greatly reduced the available acreage of this crop.

Alfalfa seed likewise appears to be less in quantity but sweet clover on the other hand shows an increase over last year. Because of larger yields in Minnesota and North Dakota, where a large part of the sweet clover seed is produced, sweet clover makes a better showing than other legumes.

The beekeeper has a vital stake in the acreage of most of the clovers since a large part of the surplus honey comes from this group of plants. When seed is plentiful and cheap the acreage is likely to be substantially increased thus offering a corresponding increase in the available bee pasture. When seed is scarce and high in price the acreage declines and the beekeeper suffers accordingly.

With favorable conditions at seeding time next spring the indications are for larger sowings of sweet clover because of the increased supply of seed. Other clovers are likely to decline until cheaper seed is available.

Headquarters for the national meeting of the American Honey Producers' League next December will be at the Roosevelt Hotel, in New Orleans. This hotel offers some of the finest facilities in the South and is located right in the business center of town, with retail shopping center and theatres just around the corner. Don't forget that New Orleans is the home of good eating.

The program committee has been appointed by Pres. Harrell, and suggestions should be made to these gentlemen: T. W. Burleson, Waxahachie, Texas, chairman; Prof. H. F. Wilson, Madison, Wisconsin; J. E. Starkey, Indianapolis, Indiana; Thos. C. Burleson, Colusa, California; and H. M. Myers, Ransomville, New York, associates.

Geo. W. Bohne, Sec.-Treas.

♦

The Newport, Indiana, High School 4H Beekeeping Club has organized for another year. This unusual club of 25 members was organized and sponsored by L. R. Stewart, president of the Indiana State Beekeepers' Association. It has issued a very interesting story of its organization, work, and accomplishments, which will be sent free of charge to any one interested.

♦

I am sending you a honey hunk which was cut and wrapped in September, 1936. I took a box of them to the office at the time and they were put away in a closet and not found until the 1st of November, 1937. About a dozen of the hunks were left in the box and all in the same condition as the one I send you, just about as good as when first wrapped. There was little granulated honey on the cut edges and they looked clean and smooth. I was rather surprised to find no granulation after a year of storage.

The closet temperature ranged probably from 50 degrees during the winter to over 90 during the summer. The 1936 crop, of course, was produced under dry conditions; honey very thick, and that helped, no doubt, to prevent granulation. We think that comb honey produced by this method is produced with less expense and that it can be handled with less breakage, and sells more readily in the stores than larger types of comb honey.

H. J. Rahmlow, Secretary,
Wisconsin Beekeepers Ass'n.

[The honey Mr. Rahmlow mentioned was remarkably free from granulation in spite of the fact that it had been wrapped about a year. In using it on our own table, we found a small amount of granulation in the very center which could not have been seen except at the time the honey was consumed. However, the importance of granulation is not the point to be observed. The fact is that this kind of honey does have keeping qualities comparable to honey of any other type.—Ed.]

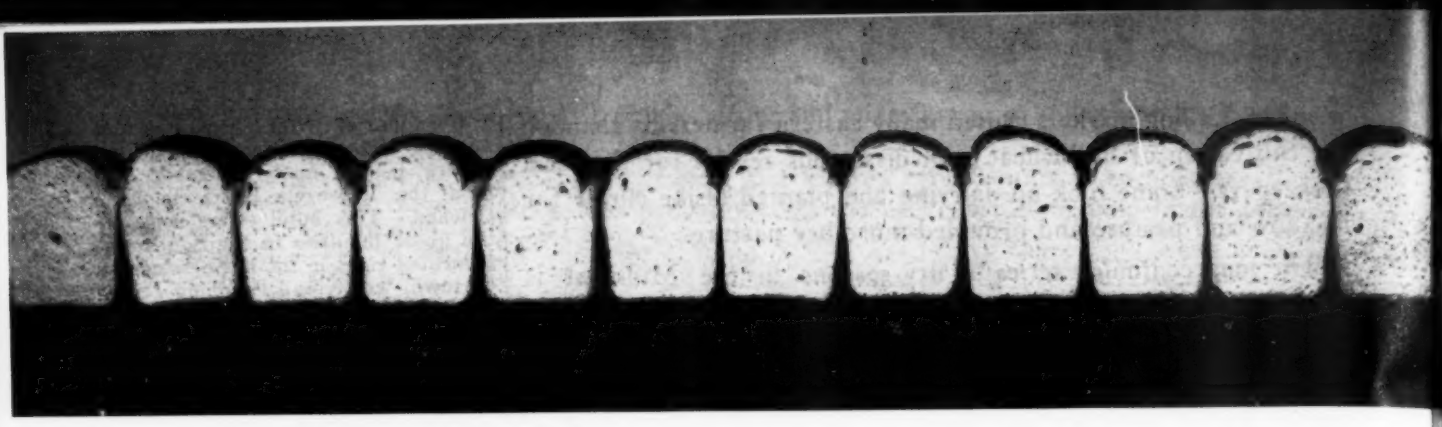


Fig. I. Effect of honey color on color of white bread (4 per cent honey).

Utilization of Honey in Commercial Baking and in Other Industries

By R. E. Lothrop,
Carbohydrate Research Division,
and L. H. Bailey,
Food Research Division, Bureau of Chemistry and Soils,
U. S. Department of Agriculture.

IT is generally recognized that the utilization of honey by various consuming industries presents numerous problems, chiefly because of the great variation in the composition of honey obtained from various floral sources.

In promoting the use of honey, great stress has been placed on flavor and high energy value as a food, which of course are of primary importance when honey is consumed directly as a table food. In its utilization by certain large industrial consumers, however, other properties besides flavor and energy value become of primary importance and indeed may be the determining factors from the standpoint of its use by these industries. This latter consideration applies particularly to certain types of honey which are not well suited for table use. In this case, it is particularly desirable to have other outlets for their disposal.

In a paper published recently by one of us (1), it was pointed out that the superior ability of honey to absorb and retain moisture in comparison with other common sugar sirups (technically called hygroscopicity), should give it special value for use in baking, for treating tobaccos (particularly cigarette and plug tobaccos), and for other purposes where ability to absorb and retain moisture is desirable. A number of the problems encountered in utilizing honey in certain other industries was also pointed out. Among these, in addition to baking, are candy manufacture, manufacture of ice cream and ices, brewing, wine and vinegar manufacture. There are chemical and technological problems involved in the utilization of honey by each of these industries. Investigational work is needed to determine the most suitable types of honey for these various purposes, as well as to determine the best method of overcoming difficulties encountered.

Problems encountered in the utilization of honey might be classed in two groups: (1) Those that arise because of the unstable or reactive nature of the individual components of which honey consists; and (2) those arising as a result of reactions that take place between certain of the components of honey and materials which the honey is mixed when used. The first might be illustrated by loss of flavor due to escape of the very volatile aromatic flavoring constituents of honey when it is heated, or by the darkening in color that takes place when honey is heated. In either case the changes take place within the honey itself and are due primarily to the nature of the individual components of which honey consists. On the other hand, when honey is mixed with other materials such as nitrogenous substances (egg albumen, proteins of flour, etc.), or with fatty materials (peanut butter, butter, etc.), there is a great tendency for reactions to take place between these materials and certain components of the honey. This may result in detrimental changes, such as darkening in color or development of off flavor, or in case of fatty materials in the development of rancidity.

This latter is well illustrated in the case of honey-peanut butter mixture. This is a very palatable product when freshly prepared, but does not keep very well, tending gradually to become darker in color, with development of off flavor, and finally even

(1) Lothrop, R. E., "Ability of Honey to Absorb and Retain Moisture, and Practical Applications of this and Other Properties to Promote Greater Use of Honey," Am. Bee Journal, 77, 281, June, 1937.

Fig. II. Whole wheat bread baked with 4 per cent honey.

the development of rancidity. It would undoubtedly be helpful to have a better understanding of the processes involved, with a view of overcoming these objectionable changes, or at least retarding them, and thus improving the keeping qualities of such products.

It is quite probable that the changes that occur when honey is mixed with other materials (the second class of changes mentioned above) are common to all types of honeys to a greater or less extent, since the reactions involved deal mostly with the principal components of honey, namely, the simple sugars. On the other hand, changes that are due to the individual components of the honey (the first class named above) would very likely be subject to much greater variations, since they frequently involve some of the less common components of honey (flavoring components, nitrogenous substances, etc.) whose occurrence and nature vary widely in honeys of different floral types.

It is quite apparent that the utilization of honey in various industries calls for special study in each case. In the following paragraphs are discussed briefly some of the results we obtained in studying the behavior of the various floral types of honey when used in baking.

It should be emphasized that the purpose of this study has not been to develop a good recipe for cakes or bread in which honey is used, but rather to make a careful study of the behavior of the various commercial types of United States honeys when used under standard conditions of commercial baking practice. A considerable amount of investigational work has been carried out in utilizing honey for home baking purposes, but most of this information is of little value to the commercial baker. There is comparatively little exact information available on the behavior of honey under conditions of commercial baking practice, particularly with respect to differences in behavior of honeys derived from various floral sources.

It is fortunate that the Bureau of Chemistry and Soils is provided with a baking laboratory in which equipment is available to carry out baking tests under carefully controlled conditions. A comprehensive system of scoring makes it possible to compare the products obtained in every detail. In most of the tests reported on here, sucrose (cane sugar) was used as a standard (or check). In some cases, however, commercial invert sugar was used in addition to sucrose as a basis of comparison. The details of the methods used will be evident when the various tests are described without further discussion here.

Bread.

Before dealing with the various bread making tests, it would be well to refer briefly to the work of Geddes and Winkler (2) who conducted a rather comprehensive series of tests with honey in bread baking, particularly in relation to relative rates of gas formation of honey and sucrose in the doughs. Their conclusions were that honey and sucrose are of equal value for bread-baking purposes on basis of sugar content. They pointed out that an extension of the market for honey in the baking industry would seem to lie in the direction of increasing its use in sweet goods where its flavor, higher sweetening power and greater hygroscopicity are particularly advantageous. Only a single type of honey (Canadian sweet clover) was used in their experiments.

In our work we have used a large variety of honey types, so that differences in the behavior of the individual types would be indicated. Figure 1 shows the results obtained with a series of honeys, the individual colors of which varied from water white to dark. The primary purpose of this test was to determine the effect of honey color on the color of the interior of the resulting loaf in the case of white bread. Incidentally, a complete score of each loaf was made, using the score card developed by the American Institute of Baking. In this system, the bread is scored on the following points: volume, crust color, symmetry of form, evenness of bake, character of crust, break and shred, grain, color of crumb, flavor (aroma), taste, and texture.

All of the loaves were baked in exactly the same manner, using equal proportions of the various ingredients with exception of the sugar, which was supplied by a different honey in each case. One loaf (the check) was baked with sucrose and served as a basis of comparison. Proportions used were 3% of sucrose and 4% of honey, based on weight of flour; 4% of honey corresponding in sugar content to 3% of sucrose. The source of sugar in each loaf, viewed from left to right in the photographs, is as follows; Sucrose (check), alfalfa-sweet clover, sweet clover, alfalfa, white clover, sweet clover-white clover blend, tupelo,

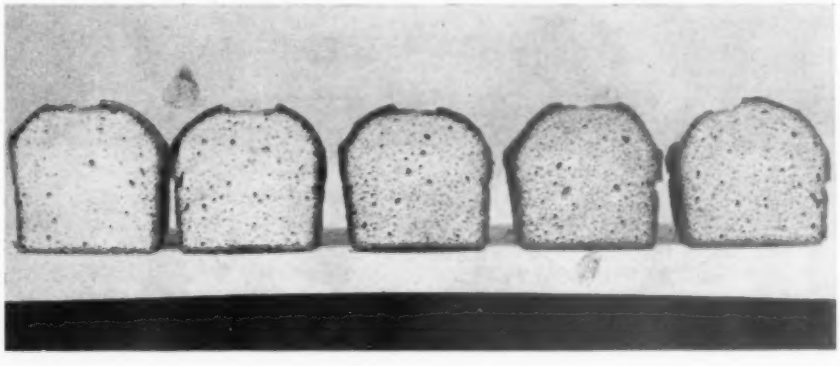


Fig. III. Cakes baked with varying proportions of honey.

(2) "A Study of the Relative Value of Honey and Sucrose in Bread Manufacture," by W. F. Geddes and C. A. Winkler, Canadian Jour. Research, 3, 543-59 (1930)

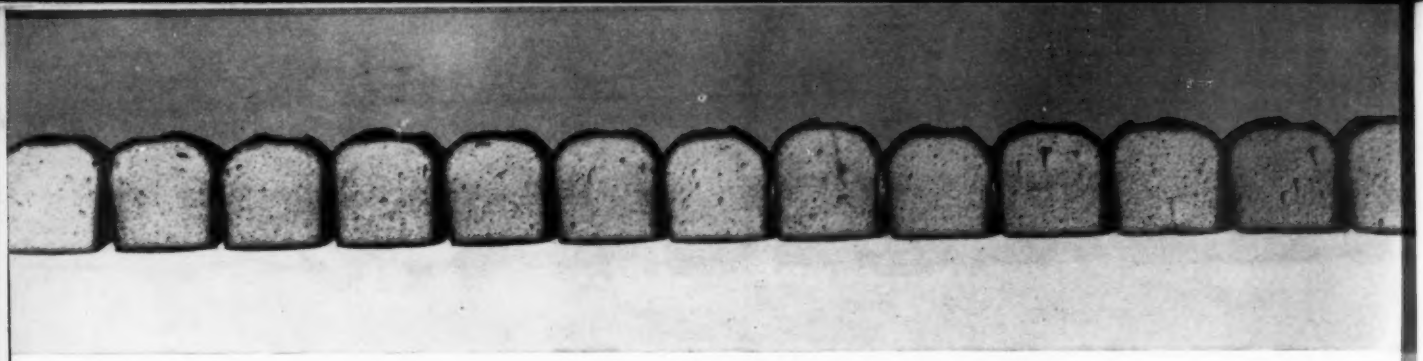


Fig. IV. Cakes baked with different floral types of honey—¼ honey, ¾ sucrose.

ti-ti, light amber alfalfa, tulip-poplar, incense-cedar honeydew, and buckwheat. This order represents the order of increasing color intensity of the honeys. It is evident from the photograph that only in case of the three darkest honeys has the color of the honey affected the color of the bread to a perceptible extent, and only in case of the darkest honey (buckwheat) is the loaf perhaps not acceptable from the standpoint of color. In all other respects, loaf volume, texture, etc., entirely satisfactory results were obtained.

A similar series of breads were baked with the same honeys that were used in the first test in which the quantity of sugar used was double the quantity used in Series 1 (i. e., 6% and 8%, respectively, of sucrose and honey). The results were similar to those of the first series except that the darkest honeys gave loaves the interior color of which was slightly darker than in the first series. All loaves were acceptable from color standpoint with the exception perhaps of the last (buckwheat).

Figure II shows a series of whole wheat bread baked with the same honeys that were used in the previous white breads. Here, of course, the interior bread color was not a factor, so that all loaves were satisfactory from this standpoint, as well as with respect to other characteristics.

Another series of whole wheat breads were baked in which the quantities of sugar and honey used were double the quantities used in the loaves shown in Figure II (i. e., 6% and 8%, respectively). In this series the loaf-volumes in general were somewhat greater than was obtained in the previous series.

Cakes.

Before giving the results of some of the baking tests that were made with cakes, it would be well to discuss briefly the work of Mr. Charles A. Glabau, Technical Director of "The Cracker Baker," who published a series of articles on the use of honey in cake baking. These articles appeared in recent issues of the magazine "Cracker Baker" (3).

(3) "The Nature and Use of Honey in the Bakery," by C. A. Glabau, The Cracker Baker, 26, Nos. 1, 2, 3, 4 and 5 (1937).

Glabau experimented with several different types of honey, and found that buckwheat and Puerto Rican honeys behaved essentially differently in certain respects from the other types of honey experimented with.

He found in general that the cakes in which the acidity of the batter was adjusted to or very near the neutral point (pH 7) gave the best results (highest scores).

Dr. Harriet Morgan (4) of the University of California also carried out a series of baking tests with various types of California honeys. She found no essential differences in the behavior of the different types of honey and recommends neutralizing the acidity of the honey. Her findings were essentially that honey could be used to replace up to 50% of the sugar in a cake recipe if the amount of liquid ingredient is lessened in accordance with the water content of the honey. If, in addition to adjusting the liquid, the acid of the honey is neutralized with sodium bicarbonate (the amount needed depending on the free acid content of the honey), honey could be used in proportions greater than 50% of the total sweetening (up to 100%). She attributes considerable importance to the acidity of honey as a factor in its use in cake baking.

In our work we did not obtain satisfactory results by using soda, or with other neutralizing agents, even when the quantity added was not sufficient to give an alkaline reaction to the batter. Cakes so baked were considerably darker in color than in similar cakes baked without soda.

(4) "The Use of Honey as the Sweetening Ingredient in Cakes," by Harriet Morgan, Jour. of Home Economics, 29, No. 1, Jan. 1937.

A number of preliminary tests were made to ascertain a suitable cake formula for use in making comparative tests with the various types of honey. The formula for a plain loaf cake in use in the Cereal Laboratory was found to be the most satisfactory one, and was used in most of the comparative tests that were made. This formula contained the following:

Sugar	90 gms.
Milk	25 cc.
Fat	45 gms.
Flour	120 gms.
Baking Powder	3.5 gms.
Salt	1.2 gms.
Egg	90 gms.

Figure III shows the results of replacing varying proportions of the sugar by honey in the plain cake formula. A clover-alfalfa blend honey of light color was used for this test. The cakes, from left to right, were baked with sucrose and 25, 50, 75 and 100%, respectively, of the sucrose replaced by honey. The chief difficulty encountered here was darkening of the interior color in cakes baked with honey. The color was not evenly distributed, being slightly darker on the bottom.

Figure IV shows a series of cakes baked with ¼ of the sugar replaced by honey in each case. The series represents the same eleven samples

Fig. V. Cakes baked with various proportions of honey and commercial invert sugar.

of honey that were used in the bread baking, arranged from left to right in order of increasing color intensity. The first cake on the left was baked with sucrose, and the cake on the extreme right with commercial invert sugar.

Another series of cakes was baked in which three-fourths of the sucrose was replaced by honey. Results were very similar to those obtained with one-fourth honey.

The use of honey or commercial invert sugar as a moisture retaining agent in cake baking is frequently recommended by bakers. However, they generally recommend that the amount used be limited to 10% of the sugar.

Figure V shows cakes baked respectively from left to right with (1) sucrose, (2) 10% honey*, (3) 25% honey*, (4) 10% commercial invert sugar, (5) 25% commercial invert sugar. It is seen that 10% of honey or invert sugar imparts only a comparatively slight excess color to the cake, whereas 25% honey or commercial invert imparts a decided color.

It would appear from the results obtained with the honey baking tests given so far, that the tendency to darken is due primarily to the reaction of the simple sugars of the honey and the nitrogenous ingredients of the batter supplied by eggs, milk, flour, etc. In this case, the behavior would be an inherent characteristic of all honeys, as evidenced by the similarity of the behavior of honey and commercial invert sugar in this respect.

Of course, this effect can be overcome by limiting the use of honey to certain types of cakes such as spice, chocolate, and other types in which color is not a factor.

Space does not permit of a further detailed discussion of this matter, but cakes of certain types such as spice and chocolate were baked in which honey was the sole sweetening agent used. These cakes were entirely satisfactory in every way in comparison with similar cakes baked with sucrose. Various types of cookies also gave similar results, which would indicate that honey is more suitable for use in this type of baked goods.

It should be pointed out here that the ability of honey to absorb and retain moisture in comparison with the other common sugars or sugar sirups (which is a valuable and desirable quality for keeping cakes fresh and moist) has not been dealt with here. It has already been shown in a previously published report by one of us (1) that honey possesses somewhat greater moisture absorbing and retaining power than any of the commercial sugars or sugar sirups. This, of course, is a valuable asset when honey is used by commercial bakers for the baking of cakes and cookies.

*Sweet clover-alfalfa natural blend honey of light color.

—ABJ—

The Qualities of a Successful Beekeeper

By Frank F. Johnson,

Wisconsin.

THERE is perhaps no other line in agriculture that requires more diversified knowledge of several trades than beekeeping. A successful beekeeper should especially have a knowledge of such trades as painting and carpentry. Though he need not be a full fledged tradesman, he should know them well enough to do the work himself. Almost everyone has done some painting, and as the beekeeper uses mostly ready mixed white lead and oil, this job should not be troublesome. In carpentry he needs only to know how to use the simplest tools, mostly the saw and hammer, but he should know how to use them well. Knowledge of other trades, such as sheet metal and plumbing would be a great help. Tools should be kept in good shape, keen and sharp. A good mechanic is known by the condition of his tools: "A dull knife tries the temper."

No man should attempt beekeeping on a large scale, unless he is strong and healthy, able to lift supers full of honey off of the hives four or more stories high. Working all day in the hot sun or in a room while extracting honey will become quite strenuous when much of it has to be done. Operating a car or truck becomes essential, especially with outyards, but in the present era only a small per cent of beekeepers are not equipped with motor cars.

The most important asset to the beekeeper is keen observation; to be able to see and know what to do and how to do it at the right time. Observation does not merely mean to look at things, but to look into and study them. An animal can see things, but only man can understand them. The habit of observation will develop with experience after a time of study and practice.

The beekeeper should also possess patience and carefulness. Careless beekeepers invite disaster when disease gets out of control and infects all his bees, due to not checking thoroughly where disease lurks and spreading it throughout the yard. Any beekeeper may have some disease in a few colonies, but with experience and care he takes proper precaution against spreading, and is able to clean up his yard. Destruction of bees and all the interior contents of the hive by burning and careful scorching or boiling of the supers, hive bodies, tops and bottoms is costly, but the safest and cheapest in the end. Too many cases have reappeared by any other method of control.

Selling, exhibiting at fairs, etc., becomes second nature after some experience, but to hold a customer after once having sold him, will call for a first-class product, carefully and neatly put up. Remember the best is none too good, and only by taking care of each customer as an individual will the value of a customer for repeat orders be appreciated.

Every good business knows at the end of the year whether it has made money or lost, and what it has cost to produce the product. A record should be kept of purchases that apply directly to the sale of honey, such as cans, pails, jars, sections, section foundation, etc., together with all expenses of operating. Those two items total the cost of sales and the remainder, after subtracting from the gross sales, gives the net returns from sales. From this amount at the end of the season should be deducted depreciation, taxes, rents and wages. If there is still a remainder the business has made some money to take care of interest on investment.

A separate record should be kept on the work of each queen and production from each colony, so as to be able to cull out inferior stock.

A good memory is quite important to the beekeeper, but when age creeps up and the memory-box springs a leak, then it is well to form the habit of making notes of important operations. Last, but by no means least, is a good working knowledge of swarm control, checking disease and other tricks that the old masters have taught us about how to produce the maximum crop of honey with the least time and labor.

The Honey Extractor

By E. L. Sechrist,

Tahiti.

Honey Getting

SECTION II

Part IX

WHILE the cost of installing one of the newer types of extractors and discarding an old one must be carefully balanced against the possible saving in time and labor, in the larger commercial operations only the most effective honey extractors will be found economical. The cheaper and smaller types of reversible and non-reversible extractors will probably continue to be found satisfactory in the two and four frame sizes for hand operation but for power use in the larger installations either (1) the radial extractor of several sizes, or (2) the type known as the pivotal reversible will be found desirable. I prefer the latter to any other extractor.

(1) Radial extractors are strong and durable, free from complications, and have few movable parts. They extract cold honey well, but if soft, hot combs are to be extracted in hot weather immediately after they are taken from the hive, too many combs are sometimes broken. If these hot combs can stand over night, no such trouble is experienced, and the radial extractor is then at its best.

In the past, some radial extractors have not had efficient and durable mechanism for controlling or changing the speed of the reel; but, as in the power uncapping knives, experience is teaching the necessity of good mechanical construction.

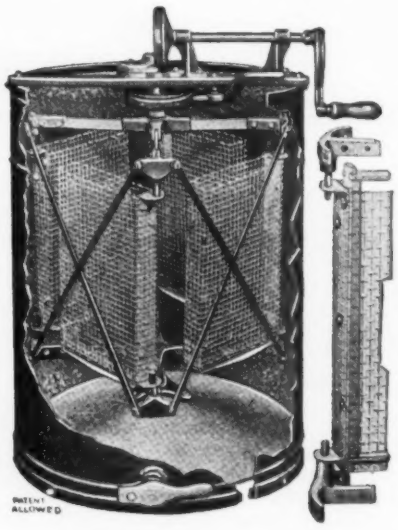
Extractors, particularly those of the radial type which are run a long time to get all the honey out of the combs, throw a fine spray of honey out over the edge of the extractor and should be kept covered while running. I have taken notes in a honey house twenty feet from such an extractor and have seen the paper become sticky with honey spray. It settles on the walls and ceilings of the room, accumulates dust and becomes dirty. This is one of the reasons why an extracting room should be finished inside in such a manner that it may be washed with a hose and scrubbed well once or twice during a season.

(2) The pivotal reversible type of extractor, in the 4-frame size, may be operated by hand, but the 8-frame size should be operated by power and will then extract honey at least as rapidly as the largest radial extractor. It is better than the old type of reversible basket extractors in that it reverses the combs without jolt or jar while the reel is running at full speed. The combs may easily be reversed several times in succession to avoid breaking soft, heavy combs.

In this type of extractor the comb baskets may be lifted freely from the machine and as readily replaced. The 4-frame size is small, light, and a particularly good machine for a portable outfit or in any other place where compactness and capacity are important.

It is always well, when buying equipment, to consider future needs because much time is lost in trying to extract a large amount of honey with inadequate equipment. One moderate sized extractor may be purchased in the beginning, and when needed another of the same size may be added. A battery of two or more moderate sized extractors is usually preferable to one large extractor. However, one modern 8-frame power extractor will extract a large amount of honey if well operated in a well planned honey house.

Extracting outfits which are otherwise good are frequently made unsatisfactory merely because the outlet from the extractor has been too much reduced. Cold honey flows slowly through even a one and one-half inch pipe. If possible, honey should run freely from the wide open honey gate of the extractor into a tank or sump provided with a basket of coarse mesh wire screen to catch bits of wax, wood, and other waste. From this sump the honey should flow freely to separator, strainer, storage tank, or honey pump.



Ordinary hand-power, reversible extractor common in many small extracting outfits. Cutaway shows manner in which baskets are hung.

Honey Pumps.

As has already been stated under Honey Houses, a gravity system of handling honey from the extractor is to be preferred. There seem to be conditions, however, when the use of a honey pump is desirable. Probably as much honey is damaged by misuse of a honey pump as in any other one way, and a pump improperly installed and used can cause as much trouble as anything around the plant. Some operators say that they spend more time with the pump than on any other piece of apparatus. Much less trouble is experienced if, as has already been recommended, bits of wood and other waste are removed from the honey in a sump or separator tank before it goes to the pump. Pumps of the geared type, with large outlets, cause but little trouble if run slowly and stopped before they cease to pump a full flow of honey and begin to suck air.

A large, rotary water pump is efficient if the lift is not too great and the honey not too cold, and serves excellently when used with a portable outfit where the honey is pumped into a tank on a truck. Because of its large capacity, such a pump may be run slowly and, if run only when needed, no air is thereby incorporated into the honey.

I have seen instances where the misuse of a honey pump, as in pumping a long distance through a small pipe, has resulted in tubfuls of foam accumulating on top of the honey in a storage tank. This foam is composed of the larger air bubbles and

particles of wax, while the smallest bubbles made by the pump and the smallest globules and particles of wax do not rise as scum but remain incorporated in the honey, making it permanently cloudy—a cloudiness which no kind of treatment will wholly remove.

A honey pump should not be attached directly to an extractor, but should pump from a tank or sump into which the honey from the extractor runs freely. A coarse screen in this sump catches all material which might stop the pump. The pump should be run only while there is honey in the sump. It should be stopped before any air begins to enter the pump. Sometimes a joint in the pipe or pump may become faulty and then air will be sucked into the stream of honey and air bubbles formed.

This sump is very useful and should always be used. It should be located where the operator of the extractor and the pump can see when it is full and needs to be pumped out. It is, of course, ideal to have the pump work just fast enough to keep the honey at a fixed level in the sump, but this can only be approximated because variations in the quantity of honey extracted per minute due to delays, partially filled or very full combs, cold or warm honey, and many other reasons, make a regular flow of honey from the extractor impossible. A sump serves as a sort of safety valve and is a great aid in getting good service out of a honey pump.

If the outlet from the honey pump is smaller than two inches in diameter, a pipe connector should be used which will permit the use of a two-inch, or at least a one and one-half inch pipe for the riser, while any horizontal run, which usually has but little slope, should be not less than three inches in diameter. A 3-inch rainwater downspout serves very well. It is good practice to insert a short piece of heavy rubber hose of 2-inch diameter between the honey pump and the riser. This expands slightly with each impulse from the pump, resulting in more even running of the pump and a better flow of honey.

Radial type extractor in use in many commercial production units.

When conditions permit, a plan which is good, but which is not often used, is to run the horizontal pipe from the pump at a low level somewhere out of the way, as along a wall, until it reaches the bottom of a separator or storage tank. Then, by means of an elbow and proper connections, a vertical riser is placed inside of the tank. The honey flows up through the riser, spills gently out of the pipe and flows down it to the honey already in the tank without dropping from a height and forming bubbles as the usual installation does when honey runs into the top of a tank.

Cold honey flows slowly, causing great friction in the pipe if they are small and almost surely the result will be the incorporation of air into the honey by the pump, even though it does not run empty. It cannot be repeated too often that mixing air into honey should be avoided. To begin with, the extractor does enough of it, while poor methods of straining do their share. Sometimes it seems as though beekeepers were taking pains to fill their honey full of innumerable small bubbles of air. Have large pipes to avoid undue friction. Run the honey pump slowly. Have a sump under the extractor gate. Never let the pump suck air.

—ABJ—

Spotted Fever

IN the "Country Gentleman" for December is an article "Spotted Fever Moves East" by A. W. Knight. Rocky Mountain spotted fever, has jumped the Mississippi and spread to the eastern states, and, as the article says, "It would seem, then, that most of us are exposed to infection through tick bite—although fortunately only a few of us are infected even if bitten. Last year in Maryland, for example, out of an estimated 1,000,000 men, women and children tick-bitten, only forty cases of Rocky Mountain fever developed. There were 1000 cases reported in the entire nation.

"Small cause for worry, you say. Perhaps. But the mortality rate from spotted fever is frightfully high—approximately 80 per cent in the West and 25 per cent in the East. It has been shown that ticks are on the increase, are now active in forty of the forty-eight states and in the District of Columbia. There is no known treatment for Rocky Mountain spotted fever once it has been contracted.

"And already cases of Rocky Mountain fever have been reported and conclusively identified in all but five eastern states and part of New York State."

Commenting on this article, Loren F. Miller, of Wiggins, Mississippi, says, "As a commercial beekeeper, it interested me greatly. In four years in Texas and one year in Minnesota, I have been bitten by ticks thousands of times and have never supposed there was any danger in a tick bite. Now it seems that a tick bite can be a serious matter, particularly to farmers and beekeepers and others who are in grass and weeds all day every day."

Probably true! Beekeepers will do well to be well informed concerning the danger from tick bites. A protective vaccine is distributed from the Rocky Mountain Laboratory at Hamilton, Montana, without charge to physicians throughout the country, and those who are exposed to frequent tick bites, might do well to look into the possibility of protecting themselves with vaccine. Ticks are found in areas where the underbrush is heavy, in fields, thickets. Many million humans are bitten each year, but if the victim contracts spotted fever as a result of a tick bite, worrying is about the only thing which can be done, unless some prevention has previously been taken.

The National Institute of Health at Washington keeps an up-to-date map of the regions where the occurrence of spotted fever is high. Those living in such areas should take advantage of the vaccine.

—ABJ—

Utah Spray Menace

Beekeepers of Utah are striving for a solution to the problem of losses caused by spraying with arsenical sprays for tomatoes and sugar beets. It is one which threatens to drive beekeepers from these areas, and the loss to northern Utah beekeepers amounts to several thousand dollars every year. As yet, no remedy has been found for this condition.

Glen Perrins,
Utah.

The Northland Comes Into Its Own—On Beeswax

By J. T. MacMillan,

New York.

WHILE many beekeepers have been basking in the golden sunshine of the southland, the past few winters have seen an ever increasing cavalcade of vacationers bound for the land of the powder snows. Traveling by car, by plane and by train, this annual winter and spring migration of skiers is rapidly assuming gigantic size.

It may seem somewhat far-fetched to bring a highly popular winter sport into direct connection with beekeeping, but just stop the first ski expert or amateur that you meet. Ask him how it is that in one moment he can so lightly, so swiftly and surely, skim down one hillside, and in the next, climb steep, perilous slopes without back-sliding or side-slipping.

Your answer will come with indisputable certainty; practice—and wax. By wax he will mean any one of seven types of patented or personal preparations, one for each kind of snow, and also for the run or race of the day. Depending on the intended use and the existing kind of snow, the ski waxes contain some combination of rosin, rubber, tallow, tar and beeswax. A few contain other materials such as carnauba and paraffin waxes, tallow and creosote. But only in small quantities.

Beeswax is the only ingredient that at times is used to the virtual exclusion of all other parts. Because of its hardness, ductility and excellent wearing qualities it is to be found in almost all formulas.

At present, there are about 60 different brands on the market, and in addition, scores of carefully guarded formulas used by the experts. These are made up in bars and tins, as liquid and pastes, in semi-soft and hard forms.

Poulsen, the Norwegian expert, states that one good wax for use at high temperatures on a newly fallen or a wet cloggy snow is composed of two parts of beeswax, two parts of tar and one each of rosin and varnish.

Here is an excellent, yet simple "langlauf" (crosscountry) wax which can readily be made at home. In addition, it is a wax suitable for all around use by the beginner. Take one part of rubber and three parts of beeswax, by volume. Add a quarter of a teaspoonful of salt. Dissolve by heat meanwhile mixing thoroughly. It is ready for use after cooling. The rubber may be obtained by shredding an old inner tube. Use beeswax containing a high percentage of propolis. And don't use any of your wife's pots or pans for the mixture!

Before applying this wax to the skis, they should have a base coat consisting of six or eight applications of any patented base wax. This should be applied by vigorous rubbing. The heat of the hand causes the wax to penetrate into the pores of the wood, thus waterproofing the skis. After rubbing for about five minutes apply a cold cloth—or place the ski in the snow—for a few moments. This hardens each coating. Continue the process until at least six coats have been put on. Then apply the langlauf wax.

You will be astonished by the results obtained through using this or any other good wax. Not only will the speed of a downhill run be increased but there will be also less slipping and falling on the climbs.

The importance of the beeswax preparations and their proper use is aptly summed up by Peter Lunn, a leading British ski racer, who says that "Many langlauf races have been

won before the start by correct weather reports which enabled the winning racer to gain an advantage through the use of the best waxes for the weather and snow conditions during the race." On cross-country runs and races, skiers often stop in order to apply to the ski bottoms diagonal swipes of an almost pure bar of beeswax. This helps to maintain their precarious grip on the snow for a dangerous climb.

As manufacturers often refuse to disclose the amounts of beeswax that they use in making ski waxes for fear of losing secret formulas, it is impossible to estimate with any degree of accuracy, the total quantity now being used. In any event, including the rather limited use in waterproofing winter sports clothing, gloves and boots, it is evident that this field as yet has not reached full expansion.

Looking at the picture from this angle, many startling facts of growth can be noted.

From one city alone the special "snow trains" are carrying from ten to fifty thousand fans to the mountains every week. The larger stores have built short ski runs in the sporting goods departments. And in attendance there are experts at both skiing and selling. Hollywood is making ski pictures, and all the popular magazines feature ski articles.

Each winter adds scores to the thousands of amateur ski clubs throughout the northland, and it is common to see as many as 25,000 spectators at one of the numerous professional jumps.

Out near Ketchum, Idaho, the Union Pacific R. R. is operating Sun Valley Winter Resort. Over a million dollars has been invested there. Because of the dry, fast, powder snows and beneficent sun of the west, skiing is at its zenith. All winter and far into the spring this resort caters to fans of the "10° above." Then there are, among thousands more, Yosemite, Mt. Washington and Lake Placid.

With favorable weather, the sport at North Creek is still going full blast the first week in March. In the Sierra Nevadas, at Tuckerman's Ravine and in many other favored places the spring months see more skiers than any other part of the year. About the time beekeepers begin to check up on the condition of wintered colonies, the warm days and cold nights combine in effort to form what is known as "corn snow." This is a formation of ice crystals the size of corn kernels that, with the proper wax, permit speeds in excess of 90 miles per hour.

The unofficial record (European) is over 110 miles per hour. Ordinary downhill speeds are about 35 m.p.h. A speed of 60 or 70 m.p.h. must be attained to make a jump of more than 200 feet.

And on July 4th, with unabated energy and vigor, they are still doing the "telemark" and "slalom" at high spots such as Mt. Rainier. These are places where honey in various forms could, with advertising, find a big market.

———ABJ———

Texas

We have had the best rain for over a year and prospects are fine.
M. B. Hinton, Texas.

Death of J. M. Cutts

We are advised by telegram from Thomas Atchison, state apiarist of Alabama, that J. M. Cutts, of Montgomery, died the night of January 9. So the South loses one of its pioneer queen breeders and package shippers. Our sympathy goes out to the family. We have known Mr. Cutts for a long time and have enjoyed business relations with him for many years with the most friendly regard on both sides.

J. M. Cutts was born December 31, 1870, in Coffee County, Alabama. He became interested in bees, while he was in grammar school, through reading about the blind naturalist, Huber, in a McGuffey reader.

At the age of nineteen he entered the beekeeping business with two box hives. He continued keeping bees as a side line until 1908, when resigning from the government postal service, he undertook beekeeping exclusively. From then on he increased his holdings and entered the package bee and queen business in 1919, in partnership with his son, Paul.

Mr. Cutts was active in organizing the Alabama Beekeepers' Association and served as its president until his voluntary retirement. He was a life member of the American Honey Producers' League and was active in securing a bee law and inspection work in Alabama. His hobby was amateur beekeepers, and he was never too busy to stop his work and help them with their problems.

In May, 1934, he suffered a stroke of paralysis. Since then his sons, Eugene and Paul, have carried on the business. They will continue to conduct it under the same name—J. M. Cutt and Sons.

Both Eugene and Paul are well trained beekeepers and know how to get out good package bees and queens on time, so their many friends and customers will need not be alarmed over the orders which may have been placed with them for the current season.

Mr. Cutts was one of the gentlemen of the Old South who new his South well and learned to love and respect bee culture and the time through which his life was spent. The breeders of the South were good friends of Mr. Cutts, and we know that the entire industry will hear of his loss with deep regret and sympathy.

———ABJ———

Another Slogan

My offering to the slogan idea is the following: **Bee Sweet Honey.** This should be an attention attracting slogan. Arthur P. Bessey,
Wisconsin.

Pioneer Michigan Queen Breeder

ONE of my earliest memories has to do with a visit to the apiary of E. E. Mott in company with my father to buy a queen bee. Father wasn't much of a hand to tinker with bees, but he had found a swarm that looked as if it needed a queen, so we set out in the old model T for Glenwood. I have a dim recollection of going into the midst of many beehives to look for a queen.

That was a good many years ago, but I have visited the place often since. I have learned much about the business of queen-rearing. In fact, I have learned to rear my own queens. Bee master Mott always had an uncanny wizardy and his ability led to the breeding of bees that seemed to have less swarming instinct.

Mr. Mott began queen-rearing over thirty years ago. He mated his virgins from little hives holding two or three sections of comb from comb honey supers. They used to swarm out when the queen went to mate, so he started selecting for bees that would not swarm out with the result indicated.

I have one serious fault to find with bees produced by this method—the colonies must be divided to make increase. I like to pay this tribute to the pioneer work of one of Michigan's skillful beekeepers.

Leon C. Nieb,
Michigan.

In the usual order, Leon C. Nieb and Mr. Mott, in midst of the bee wizard's queen rearing apiary in early spring.

—ABJ—

Robbing—Always a Danger

How easy it is to start robbing, and how difficult to stop it!

I venture to say that any beekeeper who has not had experience with robbing has gone through few manipulations with his colonies. Doubtless most good beekeepers learn their lesson through experience. But I seem not to do so!

I have unwittingly started robbing in some of these ways: I have given a colony combs fresh from the extractor; I have left a crack open in the hive of a nucleus that was being fed sugar syrup; a super, or a frame of honey has been forgotten and left out during a dearth of nectar; or, as happened a few months ago, I gave a weak colony some fine full combs of honey for winter stores. And probably on one of these combs I left an adult bee from the colony that had manufactured that honey!

What a dangerous rascal one such bee can be in a strange hive. Soon it will bring its willing friends back to bear away the spoils. How to stop the robbing?

Last spring I saved a weak nucleus by piling brush before the entrance. Of course, I first reduced the entrance to one beeway. My efforts were rewarded by seeing it develop into a strong colony in a few months. Brush with wet leaves on the branches is better to keep robbers away than bare branches.

The surest way to stop robbing, probably, is first to close up the entrance of the attacked colony and carry it into a cellar or building. After a night has passed it can then be taken to a new location where the robbers may not immediately discover it. This interim gives it a chance to reform its guards. Then, if the entrance is kept restricted for a few days to one beeway, and the colony is given the additional protection of a few sticks of brush in front of the hive, it will usually be able to defend itself. This brush serves the two-fold purpose of discouraging new robbers, and of warning the inhabitants of the persecuted colony that it has a new location.

Grant D. Morse,
New York.

—ABJ—

Our Cover Picture

Unfortunately, we are short on pictures for this particular cover. This is not said to belittle the picture used, but you will see in a moment what is meant. The little fellow leaning over the hive is the son of Mr. and Mrs. Floyd Markham, of Ypsilanti, Michigan. It shows him as he was in 1917. Now, he is one of the Michigan inspectors, a great big "lad." We should have his picture today. Here, with this account, is also a picture of Floyd Markham as he was thirty years ago (and we should have one of him today). This shortcoming did not occur to us until too late.

Michigan folks, however, know all the Markhams. Mrs. Markham writes: "We have read the American Bee Journal forty years and we hope to be able to read it many more."

Evidently this little fellow was curious from the start (front cover). So we have two generations of Markhams in beekeeping!

Simplified Honey Containers and Increased Honey Consumption*

By W. E. Braithwaite,

Division of Simplified Practice, National Bureau of Standards
U. S. Department of Commerce.

THE problem of how to improve the handling, transport, and distribution of commodities is a matter of primary importance to practically all the industries of the country. Since most manufactured products require some form of container, the best method of packing and packaging is recognized as one of the fundamentals of economical and efficient distribution. Two important aspects of the problem present themselves for solution. First, there is the specific requirement of securing the least expensive and at the same time the best dimensions, shapes, and capacities, the most easily handled types of containers, the most satisfactory units from the consumer's point of view, to be considered. These are points which concern not only the industry but the carriers and all users of a particular commodity as well.

For a number of years the U. S. Department of Commerce has stressed the importance of adequate packing of merchandise for export shipments and through the Bureau of Foreign and Domestic Commerce has endeavored to acquaint shippers with the best export packing practices. The success attained in improving export packing and packages and in reducing the large losses formerly incurred prompted interested individuals and groups to suggest that the Department undertake similar work in the domestic field.

Coincident with the movement to reduce distribution costs through simplified packing, there developed a widespread and systematic effort to simplify package design, container sizes, capacities, dimensions, shapes, also unit of pack and quantity of contents. It has been found that goods well packaged are goods half sold. The immediate object has been to eliminate the excessive or unnecessary variety in types of containers and sizes of packages (wherever it could be accomplished without too great sacrifice of individuality or other values) and at the same time concentrate production and packing requirements upon the sizes and types of containers and packages that will cover all needs without clogging the machinery of distribution and slowing down the rate of turnover.

In line with this movement, a number of industries have sought the cooperation of the Division of Simplified Practice of the National Bureau of Standards, U. S. Department of Commerce, in connection with the development and promulgation of simplified practice recommendations establishing a simplified list of recommended sizes and types based on dimensions, capacities, shapes, units per package, etc.

Under the cooperative procedure of this Division, Simplified Practice Recommendations have been adopted for shipping containers such as steel barrels and drums, corrugated and solid fiber boxes for canned fruits and vegetables, ice cream cans and butter tubs. Simplified packaging programs have been worked out by the industries concerned for such items as machine, carriage and lag bolts, automotive engine parts for buses operated by electric railway companies, agricultural insecticides and fungicides, dental plaster, paints and varnishes, cut tacks and small nails, overhead electric railway material, razor blades, flashlight batteries, electric railway and motor parts, airbrake parts for electric railways, and so on.

In 1928, the National Retail Dry Goods Association's Committee on Simplification and Standardization of Wrapping and Packing Supplies requested the Division of Simplified Practice to assist in collecting data on the methods and materials used by department and specialty stores in the wrapping and packing of merchandise for delivery. As a result of this study, simplified practice recommendations were worked out and adopted covering recommended standard stock sizes for set-up boxes, folding boxes, corrugated boxes, notion and millinery bags.

Simplified practice recommendations have been promulgated covering other containers such as paper bags used in grocery stores, and glassine bags.

In recent years the simplification of food containers and packages has been engaging the attention of the producers, packers, distributors, and consumers of food products. This movement has led to the curtailment of certain sizes and types of food containers and packages, resulting in reduced inventories and the concentration of sales effort upon recommended stock sizes. This has eliminated considerable confusion and at the same time made it possible to have more orderly marketing, fairer competition and better trade practices.

Perhaps the food container simplification program of greatest interest and widest appeal to the manufacturers, distributors, and consumers of food products is that developed for fruit and vegetable cans. In April 1928, the National Canners Association requested the cooperation of the Division in making a survey of the canning industry with a view to ascertaining the diversity existing in the sizes of cans in use at that time. A report covering the results of the survey was submitted to the committee on simplification of containers of the National Container Association. That committee recommended a reduction in the existing variety of more than 200 sizes of cans for fruits and vegetables to 27. The list of 27 standard stock sizes was accepted by the canning industry, subject to regular revision by a representative Standing Committee appointed to take charge of this simplified practice recommendation for cans. At a joint conference of members of the Standing Committee and other representatives of the canning industry and food distribu-

*This paper was given before the International Beekeepers' Congress, Washington, D. C., on October 27, 1937.

tors held at Chicago this last January, a revised list of 21 sizes was unanimously approved. This list has since been accepted by the industry and was promulgated effective September 1, 1937.

For several years the executives of the Mayonnaise Manufacturers Association had been convinced that the simplification of sizes of jars would be beneficial and advantageous in marketing of mayonnaise and kindred products. Accordingly, as a preliminary step, the association requested our Division to secure from the manufacturers and packers of these products opinions on the desirability of reducing the variety in container capacities or sizes of packages. They were asked for specific suggestions as to the sizes that should be included in a simplified list. The majority of replies received favored the idea of simplification.

Based on the results of surveys made in 1928 and 1929 by the foodstuffs division of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce, the container simplification committee of the Mayonnaise Manufacturers Association made a tentative selection of sizes and requested the Division of Simplified Practice to arrange for a general conference of all interests to formulate a definite simplified practice recommendation for package sizes. Five sizes were approved, based on liquid capacity of the containers and these five sizes were subsequently accepted and adopted by the industry.

In 1934 the Standing Committee which was appointed in 1931 to take charge of the container and package simplification program proposed a revision of the recommendation to bring it into harmony with the sizes promulgated in the Code of Fair Competition for the mayonnaise industry approved under the provisions of the National Recovery Act in March 1934. This revision was submitted to the industry and was subsequently approved by a substantial majority of the manufacturers, based on volume of production. It is to be noted that the question of shape or type of container was not considered. The survey developed the further information that only 6 of these sizes were used or required for the distribution of 85 per cent of the total production. It was apparent that 75 per cent of the sizes (capacities) in which mayonnaise jars were manufactured could be eliminated without inconvenience to the trade. Another survey made in 1929 revealed that the percentage packed in each of the principal sizes (the standard 3½ ounce, 8 ounce, and 1 pint) increased during that year; the total percentage packed in these three sizes being over 81 per cent as compared with 75 per cent in 1928.

In studying the results of a survey of production, packaging, and distribution, for the year 1936, with comparisons for preceding years, we find that about 98 per cent of the production is packed and distributed in the five standard sizes (4, 8, 16, 32 and 128 fluid ounces) adopted by the industry in 1935. I am mentioning some of the details and historical facts in connection with the development of this recommendation for mayonnaise packages because it has turned out to be one of the most successful food container simplification programs promulgated under our cooperative procedure. It is being very generally adhered to, and believe it has aided very materially in the marketing of these products on a satisfactory competitive basis.

Other container and package simplification programs have been worked out for food products such as jars for preserves, jellies, apple butter, cartons for coffee, salt packages; ice cream cartons; ice cream cups; milk bottles; and carbonated beverage bottles.

One of the best examples of the revolutionary influence of packaging in the agricultural specialty field is that for honey. Honey is one of the oldest foods known to man and contains in limited quantity practically all the elements of a perfect food except some of the vitamins,—so I am told. For many years, honey was shipped exclusively in barrels and kegs. About the beginning of the present century, these wooden packages were dropped almost entirely and in their stead the 60-pound square tin cans came into use. These 5-gallon cans, packed 2 to the case or box, continue to this day as standard containers for wholesale shipments to distant markets.

During the past few years the honey producers and bottlers of extracted honey have given considerable thought to the simplification and improvement of retail packages as a means of increasing and promoting sales of honey. Many types, shapes, and sizes of containers (particularly in glass) have been used, and it is the opinion of several leaders in the industry, as well as marketing specialists in this field, that the excessive variety in sizes and types of containers has not only resulted in confusion but has acted as a deterrent to sales.

Many of you are acquainted with the report compiled by Doctor M. P. Rasmussen giving the results of a national survey made in 1927 and 1928, covering the honey-marketing situation. This Survey was undertaken by the Division of Cooperative Marketing of the United States Department of Agriculture in cooperation with the New York State College of Agriculture, at Cornell University. The purpose of this study was to ascertain the cause for the apparent lack of demand for honey. This study covered five phases of the marketing situation: (1) studies of price trends in honey; (2) a review of national production data and of local production and marketing of honey, in New York State; (3) studies of the wholesale distribution of honey in the principal cities; (4) studies of retail distribution of honey in three cities; and (5) a study of consumers' demand.

This survey revealed the interesting information that extracted honey was being packed in at least 65 different types and sizes of containers. Data obtained from 42 firms packing a large quantity of extracted honey showed that a very large percentage of this volume was packed in relatively few sizes of containers. It was found that the operators of wholesale and retail grocery stores complained almost without exception that honey was being packed in too many sizes and types of containers. They were of the opinion that the multiplicity of sizes of packages was confusing to the consumer and actually interfered with the sale of honey. This and other findings in Doctor Rasmussen's report, which included a survey of consumers, disclosed a definite need for the development and promulgation of a simplified schedule of recommended stock sizes for honey packages.

Other studies in this field made by such experts as Harold J. Clay, associate marketing specialist, and James I. Hambleton, senior apiculturist, both of the United States Department of Agriculture; Mrs. Malitta Fischer Jensen of the American Honey Institute; Doctor J. E. Eckert, College of Agriculture, University of California; Natt Noyes Dodge, and others, all pointed to the necessity for some cooperative effort to establish a simplified list of stock sizes for retail packages. Accordingly, there was organized a container and package simplification committee to make a study and draft a recommendation for the consideration of the industry. This committee was composed of representatives of the American Honey Institute, American Honey Producers' League, Bee Industries Association of America, California State Beekeepers Association, Glass Container Association of America, Oregon State Beekeepers Association, Southern Beekeeping Conference, and Washington State Beekeepers Association. Members of this committee met with representatives of the industry in Saint Louis on February 27, 1933, at which time a tentative simplified list of recommended sizes for packages was approved.

Considerable discussion centered

on the question of the most desirable method for indicating the quantity of contents; i. e., whether by liquid measure or by weight. The point was made that most beekeepers are not equipped to check on liquid measure, whereas accurate scales for weighing honey are easily obtainable. Attention was also directed to the fact that honey is usually purchased from beekeepers by weight and shipped by weight. It was also pointed out that, if honey is bottled and sold according to liquid measure, there will be a great deal of confusion as to filling points, etc. A motion was made and adopted at this meeting that the quantity of contents in container be specified on label in terms of weight, and that this should be taken into consideration in connection with future work on the simplification of honey containers. It was decided that the variation in specific gravity and density of honey would not interfere with the simplification of package sizes on the basis of weight of contents.

There was also considerable discussion at this meeting regarding the type and design or shape of containers best adapted for use in marketing extracted honey. Several of the bottlers present considered it necessary to have a tall, slender jar to create eye appeal and to make the honey appear as light as possible. Others considered this type of jar deceptive and hard to handle, also a type of container that retarded sales on account of the difficulty encountered in removing the contents. It was decided that the matter of design or shape should be given further thought and study. In this connection, you may be interested in the results of a market survey and study made in 1934 for "Sales Management" by the Market Research Corporation of America. Consumers were asked to name branded products which, in their opinions, could be improved from the standpoint of either the product itself or the package. Criticisms received were placed in three groups or classifications as follows: (1) criticism of possible basic faults in package design; (2) criticism of paper, tin and glass containers that are too hard to open—among these were sardine cans, certain kinds of tops, caps or covers for honey and peanut jars and various types of "key" openings; (3) criticism of packages and containers which are unsanitary or inconvenient after they are open. Consumers, especially housewives, are acutely conscious of one thing and that is—inconvenience in the use of the product or the package. And let us not forget that 87% of the food is bought by women. According to "Sales Management," makers of so-called "gooey" or "sticky" products, like molasses, corn syrup and honey, apparently need to study their packages much more carefully because housewives are obviously dissatisfied with the way these products are coming to market. Several of the consumers interviewed said, "We would undoubtedly use more strained honey if it could be easily poured from their own containers without leaving the can or jar all sticky." Another consumer made the observation that "the can for a certain brand of honey is too large around to be handled conveniently with one hand. The lid must be pried off and is always a sticky mess. Some honeys are packed in glass jars with screw tops, a much preferred arrangement"—according to this consumer. Still others said —"We'd like a jar of honey that is short and squat instead of tall and thin, so that when the honey gets down to a low level we can still use a teaspoon to get it out, without having to go into contortions." These criticisms are not new to the honey producers and packers. To me they are significant because they reflect the views of the consumers and give good reasons why more honey is not sold and consumed.

The recommended list of sizes for honey packages as approved at the meeting in Saint Louis in 1933, met with quite general approval of the producers and distributors of honey, but comments and suggestions were later received which indicated the need for certain changes to make the program more widely acceptable. Accordingly, the American Honey Producers League, at its meeting in February 1934, considered these comments and voted unanimously in favor of the revised schedule. The revised list of recommended sizes was also approved by the simplified practice committee and subsequently accepted by the industry effective from October 1, 1934. In March of last year, the Standing Committee of the industry organized to take charge of the recommendation proposed that the schedule for stock sizes of glass containers be revised to include jars holding 24 and 48 ounces avoirdupois in place of pint and quart sizes formerly recommended. This change was proposed in the interest of uniformity and better marketing practices. In July 1936, the Standing Committee again proposed a revision to include a jar holding 32 ounces avoirdupois. This change was made in recognition of the indicated demand for this capacity and as a means of assuring increased adherence to the recommendation for stock sizes.

The revised recommendation which was approved by the industry and which is still in effect includes the following sizes and types of containers for use in marketing stock packages of extracted honey:

Glass Containers:—Capacity 5, 8, 16, 24, 32 and 48 ounces avoirdupois.

Tin Containers:—Capacity 2½, 5, 10 and 60 pounds avoirdupois.

This recommendation for stock packages is subject to regular review by the standing committee previously referred to.

It is interesting to note that some of the states are setting up standards for containers and packages as well as standards for the honey itself. Under the general provisions of the Agricultural Code of California, permissive standards are as follows: 5-gallon cans, 5 and 10 pound tin cans or pails, 2-pound tin cans. Glass bottles to hold 3 pounds, 2 pounds, 1½ pounds, 16 ounces, 12 ounces, 8 ounces and 5 ounces are recognized standards. The Department of Agriculture of the state of Oregon has established as standards the 5, 8, 16, 24 and 48 ounce package in glass or fiber containers and 2½, 5, 10, and 60 pounds avoirdupois capacity tin containers. These standards conform to the recommended sizes adopted by the industry.

Recently I was handed a copy of a report covering the results of a cooperative investigation conducted by the Pacific Coast Bee Culture Laboratory of the United States Department of Agriculture, Bureau of Entomology and the California Agricultural Experiment Station on "Honey Marketing in California." In gathering information relative to the retailing and consumption of honey in California, personal visits were made to 179 retail stores during December 1931 and January 1932. Of this number 77 were selected at random from the important shopping districts in the Los Angeles metropolitan area. Two of the stores were visited incidental to other work in Fresno and Bakersfield, while the remaining 100 stores were fairly representative of the San Francisco area. The containers in which honey was packed for retail sale, especially the glass containers showed a wide variation in type and size. In the 179 stores visited during the study, 48 different sizes of packages in glass containers were recorded. These varied in net weight capacity from 1 ounce to 10 pounds, with the largest number of cases falling within the smaller sizes or less than 2 pounds. It was found, of course, that metal containers are standardized for size and form or shape to a much greater extent than are the glass containers. The familiar cylindrical can or pail with a "plug" or friction top is in almost universal use with the exception of lots in large bulk not ordinarily found in retail stores.

While it is outside my province to discuss prices, it was interesting to learn from this report that price is

a contributing factor to a bad marketing situation. As might be expected, the price of honey to the consumer when reduced to a per pound basis varies according to the size or type of container in which it is sold. The study showed that there was a great variation in the price per pound even with the effects of differences in container size partially removed. There was a very considerable variation in the price per pound at which honey was sold in the same sizes of containers. It is easy to see how a large number of package or container sizes contribute to a multiplicity of prices. As revealed in the report, the retailer cannot always be sure whether he is overselling or underselling his neighbor because his sizes are different and the matter is further complicated by the large number of brands. The effect that this confusion of container or package sizes, brands, and price has on the volume of retail sales of honey is also clear. It is a significant fact that the lack of standardization of container sizes was repeatedly mentioned by the retailers as working against the successful handling of honey, for it was said that even the regular purchasers of honey found it difficult to carry in mind definite ideas of size and price. In looking through the June 14 issue of "Advertising Age," I noticed an interesting article to the effect that "cost of purchasing new packaging machinery and concomitant expenses in making changeover are given us as major reasons why the majority of manufacturers —exclusive of those whose products sell for a flat nickel or dime—are preferring to increase price rather than reduce sizes of packages.

A well-known economist with years of experience in making economic surveys of a number of agricultural industries in this country and other countries stated that in his opinion the future of the beekeeping industry would be greatly brightened and materially enhanced if beekeepers all over the country would only adopt some uniform method of merchandising their honey and cooperate in selling it in an orderly manner.

It is apparent therefore that much remains to be done in connection with the development and promulgation of a simplified schedule of package sizes that will be adequate and generally adhered to.

In closing, I would like to suggest that a representative committee be appointed to study the relationship of container or package simplification to the marketing of honey in the United States. This committee could work with the Standing Committee in charge of Simplified Practice Recommendation R156-37, Containers for Extracted Honey. This joint committee would have the close cooperation of our Division of the National Bureau of Standards, and I am sure the experts in the United States Department of Agriculture would be pleased to cooperate in every way possible in connection with such a constructive program.

—ABJ—

A Bulk Comb Honey Frame

By George Harrison, Jr.,

Virginia.

WHEN I started to produce bulk comb honey, I found no suitable super for the purpose. The shallow standard 5-⅜, in common use, had many disadvantages. When ten frames were used, the combs were too thin; with nine, the combs were very nearly right but just a trifle too thick. The ⅜ inch top bar was too thin under the weight of the honey, and the standard top bar was too thick, as it reduced the width of the comb too much.

Also, it took time and care to space nine combs accurately when placing the supers on the hives, and should a frame slip when handling the supers after the combs were drawn, this frame would be burred to its neighbor if placed back on the hive. Then, after producing a nice super of honey, the frames usually shift while hauling the supers home, and the combs come in contact with each other resulting in serious damage. Often, the cappings are badly broken and the honey is oozing through them on arrival home. It is a discouraging condition in which to find your honey after all the care you have taken in producing it.

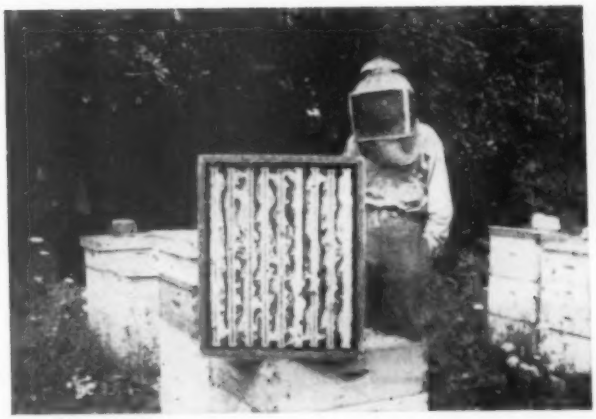
The narrow 11-16 inch bottom bars with which the supers are usually supplied are also undesirable. When the bees fill these frames with the narrow bottom bars, they build the comb around the bottom bar and attach it to the top of the frame below. All this burr-comb, which is really a continuation of the comb in the frame, is filled with honey and sealed. When the super is removed, it must be pried loose, and when the super is placed on the truck, the honey from the broken burrs drips down on the supers below, running over the surfaces of the combs until it reaches the bed of the truck where it forms a pool held in by the rim of the super. It streams all over your clothes when carrying the supers into the honey house. Everyone who has produced bulk comb honey in the conventional frames will recognize the condition of which I am speaking.

The standard wedge top bar is too thick, because with the ⅜ inch bottom bar, reduces the width of the comb too much. The thin grooved top bar is too thin as it sags under the weight of the honey, as I have already said, and it is also hard to re-foundation. I have more difficulty, too, in keeping foundation in the grooved frame. **This standard 5-⅜ inch frame, therefore, is not at all suited to the production of bulk comb honey.**

To overcome some of these objections, I experimented with wide bottom bars, cutting off the projections at the bottom ends of the usual end bars, replacing the regular bottom bars with ones as wide as the entire lower end of the end bars. Such remodeled frames were a decided improvement in preventing burrs, but, of course, all the other objections still remained.

Two years ago my attention was called to a frame built by James E. Hilbert. His frame was patterned on the old Danzenbaker frame made years ago, except that the spacing was 1½ inches instead of 1⅜. In some respects, however, it was entirely different. It had a wide bottom bar 1⅛ inches; straight end

This is what we expect and usually find beneath a good super of frame comb honey when conventional frames are used.



This is the underside of the super removed from the hive in the opposite picture. The combs were built right around the narrow bottom bars. They are dripping quantities of honey.

bars contacting each other along their entire length; and a slotted top bar. Except for the slotted top bar, this frame looked to me like the answer to the bulk comb honey producer's prayers, so I set about to design a new top bar.

I made a top bar ⅝ inch thick and perfectly flat across on the underside with the regular corner strip with which to nail in the foundation. I nail in the foundation and quickly run a stream of melted wax along one side of the foundation. I have never had a sheet of foundation so fastened break out in hauling to the yards. With this top bar, I had to redesign the Hilbert frame some and after finishing, **I had a frame with a ⅝ inch thick top bar and a corner cut wedge, end bars spaced 1½ inches and in contact along their entire length, a 1⅛ inch wide bottom bar of ¼ inch thickness.** With a ¾ inch board fastened inside to one of the sides of a regular super, nine of these frames fill a 10-frame super just right. A division board instead of the attached ¾ inch board might be much l etter, as it would facilitate the removal of the combs of honey. These frames permit a comb to be built 4 7-16 inches wide.

After a two years' test in the bee yard, this super seems to me almost perfect. I displayed it at the Virginia Beekeepers' Association meeting where it was received with enthusiasm, and I am certain it caught the fancy of many of the bulk comb honey producers in this part of the country.

To summarize, the conventional 5-⅜ inch super frame when well filled with comb honey results in a sticky running mess when removed from the hive, due to the broken burr-comb. They are tedious to hand-space when placing them on the hives using only nine frames to the super. They do not remain spaced when hauling and the combs are damaged.

The new super, as here described, gives the right thickness and width of comb; the frames remain rigidly in place; no more burrs are built between these supers than will occur between section comb honey supers; and all the tedious hand spacing of frames is eliminated.

How Far Will a Swarm Go in Seeking A New Home?

While deer hunting in the Catskills three years ago, I came across a tree that had been cut by someone in order to rob out the honey from the colony of bees that had established themselves there.

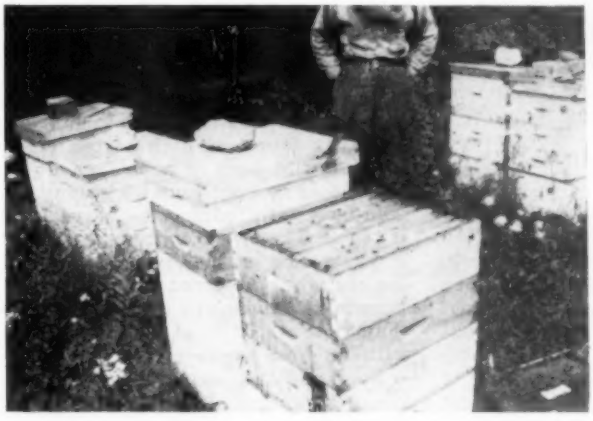
The spot, as near as I could reckon, is five miles from the nearest dwelling.

To be sure there might have been intervening bee trees from which this colony originated. I don't know of course, but the question intrigues me.

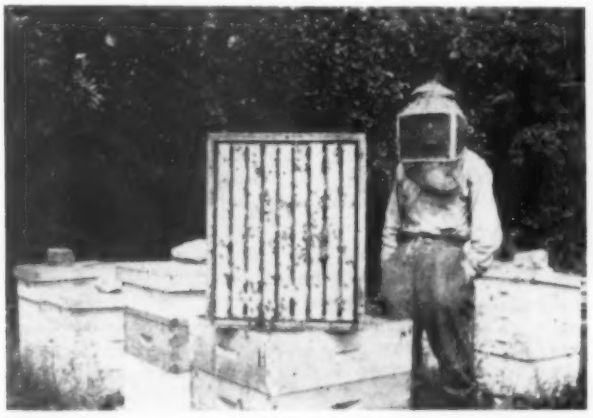
Another interesting question about absconding swarms is, in what direction do they abscond? Most of my beekeeping friends say, "West."

They do not mean this humorously, although they realize that such swarms "go west" so far as they, the beekeepers, are personally concerned.

Grant D. Morse,
New York.



The hive from which the super in the opposite picture has been removed. Compare the tops of these frames with those in the hive shown directly above.



The under side of a new type frame comb honey super. The combs are 100 per cent filled and sealed. A few minor burrs were built between the bottom bars shown and the top bars of the adjacent frames.

Typical Cuban Apiary

We are indebted for this picture of a typical Cuban apiary to O. Hurtado de Mendoza, of Habana, Cuba. This is a well kept apiary, with a neat, tidy, little honey house in a grove which protects it.

ABJ

The Catmints As Honey Plants

MR. Pellett's note on nepetas on Postscript page of a recent issue of the Journal prompts me to say a few words on the genus as a whole. As most readers know nepeta belongs to the great mint family, a large group of plants, usually containing a fragrant oil. It is a large genus of about one hundred and fifty species, mostly confined to the Old World, though a number have run wild in this country, including the ubiquitous catnip, **Nepeta cataria** of botanists.

In addition to catnip there are a numer of species that I have tested which show much promise as nectar plants. Perhaps N. Mussini, a rather dwarf plant from the Caucasus region, is the most promising of the lot. Apparently there are two different plants in American trade under this name, one with grayish leaves and lavender flowers (a beautiful plant for the flower garden) and the other with larger, coarser leaves which lack some of the grayness of the other and with flowers of a darker color. Although there is much difference in the garden value of the two plants, the first being far superior to the other, there is apparently little difference in their attractiveness to the bees, both plants drawing them from the time the first flowers open in spring until the close of the flowering period, often in September. Such a long season of bloom is not possible, however, unless the plants are clipped after each crop of flowers.

The next most popular species with the bees, as they have been grown here, is N. grandiflora. When well grown this is a spectacular plant, so far as beauty goes, making specimens close to three feet in height and as much as four feet across which are covered with large blue flowers over the usual long catmint period. No such results are to be expected when the plant is grown in quantities sufficient to make it worthwhile as a honey crop, but even then it is an excellent grower and a long-time bloomer.

Both of these catmints do well in dry situations, the first one doing nicely in a quite sterile soil, but the latter is better for a fairly rich growing medium. Both grow readily from seed, which is perhaps the propagating method to follow in cases where the bee pasture is the desired end.

Nearly all catmints that I have grown are attractive to the bees, the ones named being particularly good. If you are interested in nectar plants which can be used to supplement your present supply you will do well to experiment with any catmints available.

C. W. Wood,
Michigan.

ABJ

What Is The Matter With Modern Bee Culture?

Two articles in the American Bee Journal for September, 1937 deserves careful study and analysis. One of them "Prevalence of American Foulbrood in the United States and Canada" on page 425. The other article "Beekeeping in the Willamette Valley" on page 440. The writer has long harbored the idea that foulbrood was very prevalent in the south because of two conditions. The antiquated methods of beekeeping in many regions of that territory, and also he had thought that wild bees were plentiful. With the old box-hive and the, so-called, bee gum, so universally used in many locations of the south, yet a record showing only two per cent of foulbrood certainly seems significant. Then again; in the article, "Beekeeping in the Willamette Valley," there are two statements that should brook much to the beekeeping interests. The first statement in the Marty article is that "foulbrood is rampant in Marion County, Oregon."

In the second statement, Marty says that the County Judge in hunting bees has found as high as ten colonies of wild bees in a half day, yet that he has never found a colony of wild bees with foulbrood. Marvelous if true. The two conditions outlined in these two articles should be food for thought. May not the "up to the minute" beekeeper wonder? May they not ask, "What is the matter with modern beekeeping?

Facts of this nature staring beekeeping interests in the face give rise to several questions. What does the wild bee, with no care, possess that renders her immune to foulbrood? Is it possible, or even prob-

able, that the wild bee has developed a trait that gives an immunity to foulbrood that the beekeeper is hoping to establish in his colonies? It may be asked, what is lacking in the bee under careful culture that makes her susceptible to the disease? With less than two per cent of foulbrood in the south naturally indicates that bad beekeeping and wild bees are not strong factors in the spread of the disease. Again, is it possible to develop a strain of bees from wild bees that are immune to the disease? If there is a principle which the wild bees possess, rendering her immune, that principle can be learned through careful study. Also that, that which is lacking, in the bee under cultivation can be worked out, by careful investigation. It seems that progress in rooting out American foulbrood is held back through gross ignorance of those who "keep" bees.

Dr. A. L. Hunt,
California.

ABJ

Immunity to Bee Stings

By Robert H. Dadant,

Illinois.

Up until the spring of this year almost every bee sting which I received brought on a violent physical reaction. Hives broke out over my entire body, followed by itching; my feet, hands and face swelled up; my throat and tongue became enlarged, making it difficult to breathe. This condition usually lasted from five to eight hours.

During the winter, I found that the R. J. Strasenburgh Company of Rochester, New York markets a product made from bee venom, Ven-Apis, which is used hypodermically to relieve rheumatism. I wrote to this company and found that it had been used with some success several times to build up immunity to bee stings. They refused to sell the Ven-Apis to me directly and asked that I refer my physician to them.

A few weeks later my physician secured a supply of this Ven-Apis and gave me the treatment. It consisted of ten applications on consecutive days. The first injection was a test injection of a very weak serum. On the second, third and fourth days, I received one, three and six injections of No. 1 serum. This was repeated with No. 2 serum on the next three days, and No. 3 serum on the eighth, ninth and tenth days. The tenth day, I received six injections of No. 3 serum, amounting in all to about two and one-half bee stings.

On the first four days, I had no noticeable reaction to the injections. The fifth day brought on some swelling and itching which increased each day, and on the last day was worse than a bee sting had been before.

Since then, I have been stung a number of times. There has been some reaction to most of these stings, but it has not been at all comparable to what I used to go through. I am convinced that the treatment has been of some help to me.

The doctor suggested that to keep the immunity, I ought to make sure to get stung every now and then. For about a month after the treatment was completed, I caught a bee each day and stung my arm. Since that time, I have been stung once or twice a week and have had only minor reactions as mentioned above.

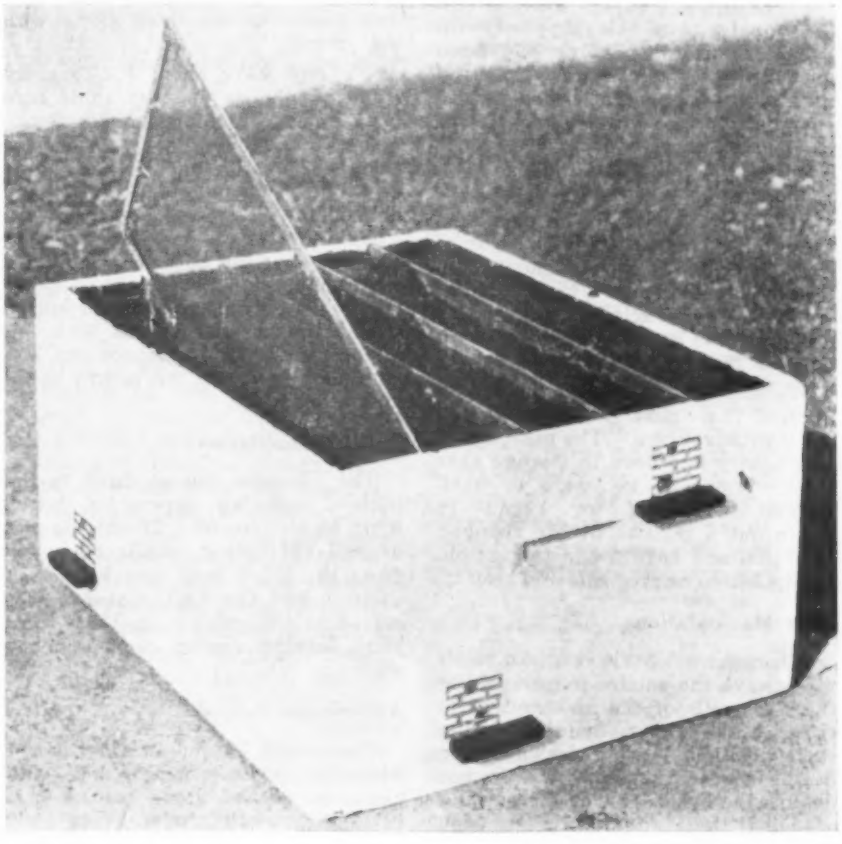
ABJ

Queen Testing Nuclei

THE use of nuclei in testing inseminated queens in quantity lots at the Bureau of Entomology Laboratory, Beltsville, Maryland, requires less equipment and fewer bees than full colonies. The compartment hive shown in this picture as used by W. J. Nolan affords a convenient shelter for a queen-testing nucleus. It is merely a standard 10-frame hive body screened on the bottom, and capable of being divided into five bee-tight compartments by removable screen partitions; that is, division boards made of copper screening with tin rims. These partitions slide in grooves cut in the ends of the hive body. Each compartment holds a two-frame nucleus. Such a nucleus can readily be converted into a four frame or larger nucleus by pulling out the necessary number of movable partitions. Each compartment has its own inner cover and outside entrance. When in use it is set over a full-depth colony.

Even two-frame nuclei in a compartment hive body can be successfully wintered, (if they have sufficient young bees and proper stores,) by placing a double-wall collar around such a hive body after it has been placed over a colony in a double-wall hive. The original entrance to each compartment is connected with the outside by a piece of glass tubing or other material, extending through the collar. A sawdust tray and telescope cover are placed on top.

From Journal of Economic Entomology, October, 1937, "Improved Apparatus for Inseminating Queen Bees by the Watson Method," by W. J. Nolan, U. S. Department of Agriculture, Bureau of Entomology and Plant Quarantine.)



My Sweet Clover Queen Excluder

By L. T. Floyd,

Manitoba.

EVERY year in this sweet clover province a few more commercial producers discard the queen excluder. In some districts I see stacks of excluders piled up that have not been in use for several years. One year without them and they never turn back.

About six years back I was interested in an apiary that developed a few cells of A. F. B. In some of the colonies the operator had no previous experience with disease so I decided to assist him. This plan of swarm control was to use the double brood chamber with the excluder between the second and third hive bodies. We destroyed the colonies that showed infection at supering time, but knew full well that more would crop up later.

My instructions were to give plenty of supers and leave until the crop was over. This meant about five stories high, then I went out to inspect before any supers were moved. This apiary was half supplied with excluders, the honeyflow had been good and the stacks were full and nearly all sealed. The brood nest in every case was down in the lower hive body, whether excluders or not were used.

The colonies with the excluders were surely a mess. The excluders were built in solid with burr-combs that leaked over everything when I pried them loose. The colonies without queen excluders were clear of burr-comb and were oh, so much nicer to handle.

We talked the matter over and decided that next year we would work without them. The excluder in that apiary had been in storage ever since. Then if we were to work without excluders we began to figure out a plan to fit the changed condition and have found this simple manipulation to give splendid results.

First Manipulation.

When the colony is ready to super we remove the combs of honey from the side walls of the hive and place them in the super in exactly the same position, leaving drawn combs in the spaces vacated. We do not disturb the brood nest or the garland of pollen that is found at each side at that time of year. The super of combs is empty at the start, except for the combs of honey at the side. The brood nest then gradually spreads upward into the second body and in a most natural manner. Before it reaches the top bars it will be time for the second super.

Second Manipulation.

We then remove the first and set it to one side and take out from the lower hive body the combs that were placed there empty two weeks or more before and these will have honey and no brood because the queen has worked upward and not outward. These are placed in the centre of the new hive body and the empty combs placed back the same as in the first manipulation. This only takes a minute, the second body goes back into position and the sealed combs of honey that were moved up in the first move are also removed and placed in the third along with the others.

We now have about six or more combs of honey in that third hive body in the centre and twenty combs below with little except brood in them. The third super of honey acts as a queen excluder and there is no danger of the queen going upward while there is plenty of egg laying space below; the bees will not move that honey unless the queen needs room. Twenty combs is sufficient to supply the best of queens with egg laying space. The operator can buy another super with the money saved on the excluder.

Third Manipulation.

The operator can go back to the bottom replacing supers of honey with empty combs. If this is not desired the fullest combs of honey from the third body can be moved upward and the half sealed combs moved to the centre in that third body, leaving empty combs at the side.

Advantages Gained.

There will be no swarms except when the queen is superseded. Old honey is pushed along to the first extracting leaving new honey only for winter. It simplifies matters when fighting disease as queen excluders are the most difficult equipment to disinfect. Brood nests are not interfered with and expand naturally. Some very successful operators have always maintained that queen excluders are also honey excluders. We side in with them. It keeps down overhead, which is important, if we are to sell six cent honey at a profit.

A Warning.

This plan is not recommended for other than sweet clover districts where the flow is continuous. That is why I call it a sweet clover queen excluder.

—ABJ—

Don Goes Wild

This is a picture of Don Barrett, formerly inspector of apiaries in Michigan. It is sent by Walter E. Becker, secretary-treasurer of the Wayne County Association, Detroit, Michigan.

Don is certainly close to nature and doesn't seem to mind it a bit. Ever so often some hardy individual gets familiar with the original playthings of Adam and Eve. Anyway, Don seems to be enjoying it. He must have some of the original Adam's rib in him.

Meetings and Events

Kansas Beekeepers to Meet Feb. 10.

The winter meeting of the beekeepers of Kansas will be held February 10, during Farm and Home Week, on the campus of Kansas State College, Manhattan. The program is sponsored by the Department of Entomology of the College, under direction of Dr. R. L. Parker, State Apiarist and professor of apiculture, cooperating with Kansas State Beekeepers' Association. All Kansas beekeepers, "big and little," are urged to take time off to attend this meeting, as it is not only highly educational, but the cooperative spirit can best be developed in every beekeeper by rubbing elbows and mixing with those whose problems in beekeeping, production, and marketing are practically identical with his own. The program:

9:00 a. m.—"Apiary Inspection Service in 1937," Dr. R. L. Parker, State Apiarist, and Professor of Apiculture, Kansas State College, Manhattan.

9:30 a. m.—"Moving Colonies of Honeybees During a Honeyflow to a Honeyflow," J. F. Garner, Reserve, Kansas.

10:00 a. m.—"Queen Quality and Queen Supersedure," Dr. C. L. Farrar, U. S. Bee Culture Laboratory, Laramie, Wyoming.

11:00 a. m.—Kansas State Beekeepers' Association Meeting.

1:30 p. m.—"Beekeeping in Kansas for 1938-1939," Dr. R. L. Parker.

2:15 p. m.—"Pollen and Two-Queen Colony Management," Dr. C. L. Farrar.

3:00 p. m.—"Cooperative Marketing of Honey," H. W. Stewart, Secretary Kansas State Beekeepers' Association, Highland, Kansas.

3:30 p. m.—"New Recommendations for Package Bee Installation," Dr. C. L. Farrar.

H. W. Stewart,
Secretary.

—o—

Indiana County Meetings, February and March.

Date	County	City	Time
February			
4	Wabash	Wabash	1:30 p. m.
5	Miami	Peru	1:30 p. m.
7	Cass	Logansport	1:30 p. m.
8	Carroll	Delphi	1:30 p. m.
9	Benton	Fowler	1:30 p. m.
10	Newton	Kentland	1:30 p. m.
11	Lake	Crown Point	1:30 p. m.
12	Jasper, Rensselaer		1:30 p. m.
14	Clinton	Frankfort	1:30 p. m.
15	Montgomery	Crawfordsville	1:30 p. m.
16	Warren	Williamsport	1:30 p. m.
17	Fountain	Covington	1:30 p. m.
18	Vermillion	Newport	1:30 p. m.
19	Parke	Rockville	1:30 p. m.
21	Hendricks	Danville	1:30 p. m.
22	Boone	Lebanon	1:30 p. m.
23	Putman	Greencastle	1:30 p. m.
24	Clay	Brazil	1:30 p. m.
25	Sullivan	Sullivan	1:30 p. m.
26	Vigo	Terre Haute	1:30 p. m.
March			
4	Morgan	Martinsville	1:30 p. m.
5	Johnson	Franklin	1:30 p. m.
7	Bartholomew	Columbus	1:30 p. m.
8	Jackson	Brownstown	1:30 p. m.
9	Shelby	Shelbyville	1:30 p. m.
10	Decatur	Greensburg	1:30 p. m.
11	Fayette	Connersville	1:30 p. m.
12	Rush	Rushville	1:30 p. m.
14	Owen-Monroe	Bloomington	1:30 p. m.
15	Lawrence-Orange	Bedford	1:30 p. m.
16	Daviess	Washington	1:30 p. m.
17	Gibson	Princeton	1:30 p. m.
18	Posey	Mt. Vernon	1:30 p. m.
19	Vanderburgh	Evansville	1:30 p. m.
21	Warrick	Boonville	1:30 p. m.
22	Spencer	Rockport	1:30 p. m.
23	Dubois	Jasper	1:30 p. m.
24	Pike	Petersburg	1:30 p. m.
25	Knox	Vincennes	1:30 p. m.
26	Greene	Linton	1:30 p. m.

For the remaining counties, meetings can be arranged when the inspector arrives for work or the local beekeepers can arrange to have meetings without waiting to have them arranged from this office.

James E. Starkey,
Indiana.

—ABJ—

American Association for Advancement of Science.

Probably the statement of greatest interest to the beekeeping industry made at the meetings of the American Association for the Advancement of Science held in Indianapolis, Indiana, December 27, 1937 to January 1, 1938 was made by Gove Hambidge, science writer for the U. S. Department of Agriculture, who stated that the first significant work in animal breeding for resistance to disease will probably be done with the honeybee.

The following is a paragraph taken from his address entitled "Science in Agriculture." "Breeding animals for resistance to disease has hardly been approached as yet, and in some quarter it is thought to be impossible. The greater difficulties and uncertainties in animal breeding include the impossibility of selfing, which is so important in enabling plant breeders to get homozygous or "pure" strains; the impossibility of securing a sufficiently large progeny from a single cross to represent all the possible combinations of even a comparatively small number of interacting genes; and the high cost of animal experimentation on a large scale. So far as breeding for disease resistance in an animal organism is concerned, the first significant work will probably be done with the honeybee, now that technical difficulties in bringing about controlled artificial impregnation have been overcome."

The Apiculture Section of the American Association of Economic Entomologists met Tuesday morning, December 28, 1937, in the Lincoln Hotel. In the absence of Edwin J. Anderson, State College, Pa., Prof. B. Elwood Montgomery, of Purdue University, acted as chairman. W. A. Price, Lexington, Ky., secretary of the section, was present and was reelected to that post. Prof. J. M. Robinson, Experiment Station, Auburn, Ala., was elected chairman of the section for 1938.

The meeting was well attended with representatives from all parts of the United States. Although there were 13 papers listed on the program, circumstances prevented all but two of the authors from attending the meeting and presenting their papers. R. M. Melampy, of the Southern States Bee Culture Laboratory and M. H. Haydak, of the University of Minnesota, presented papers. At the close of the meeting V. G. Milum, of the University of Illinois, reported the result of work done on moths reported to be frequently confused with the lesser wax moth.

"Growth and Development of the Female Bee" by R. M. Melampy, E. R. Willis and S. E. McGregor, Washington, D. C., was the paper presented by Dr. Melampy. This study was a comparison of growth and development factors of the worker and queen bee. Of particular interest were the fine graphs which demonstrated that the growth of the worker and queen bee are the same for the first five days after the egg hatches. It is at this point that the brood cells of both have been completely sealed or capped. From this point on the growth of the worker bee ceases while that of the queen continues for approximately three more days. Whether this is due to more copious food, different food or both, is still a matter of controversy.

"Vitamin Content of Bee Foods. 1. Vitamin Content of Royal Jelly and Bee Bread." M. H. Haydak and L. C. Palmer, St. Paul, Minn., was presented by Dr. Haydak. This interesting paper stated that Vitamin E, the anti-sterility vitamin, was not present in Royal Jelly; that while there was an indication that it was present in bee bread, it was not there in very large amounts.

—ABJ—

Yakima Spray Problem.

How to deal with the poison spray problem was the chief consideration at the annual meeting of the Washington State Beekeepers' Association in Yakima. The fruit people are attempting to cooperate with beekeepers, but no successful way of stopping the poisoning from the use

of spray on fruit trees and vegetables has yet been worked out.

According to the district extension agent, M. F. Bunnell, losses in the Yakima Valley from spray poisoning have been as high as 50 per cent of the colonies of the bees, and it was estimated that the next season's crop from the approximately 8000 colonies will only be 25 per cent of normal. Other sprays in general use in addition to lead arsenate are almost as deadly as the lead arsenate itself. According to M. F. Mommsen, of Tacoma, the secretary of the association: "The fruit industry will have to cooperate with beekeepers or they will have to develop non-poisonous spray or keep their own bees for the purpose of pollination."

Mrs. Eva Wixom, of Wapato, at this meeting also said, "If beekeepers want to improve the market for honey, get your wives to use it for cooking and encourage them to urge others to do the same." (Isn't that true!—Ed.) Mrs. Wixom recently attended a convention of the Oregon association where a campaign to promote the use of honey in cooking was being vigorously promoted.

I. L. Swain, of Prosser, was elected president; E. B. Ellingsen, of Parkland, retiring president, was named vice-president; and R. C. Immele, of Toppenish, secretary-treasurer.

The association adopted a three point program: To increase its membership, clean up foulbrood, and to financially support the American Honey Institute. C. W. Higgins, of Wapato, was made chairman of the committee on disease control with C. H. Shader, of Sunnyside, and J. B. Espey, of White Swan. For the west side of the state, Miss Elizabeth Dickerson, of Woodinville, was made chairman of a similar committee with Rev. M. F. Mommsen, of Tacoma, and M. C. Danforth, of Gig Harbor. For west side membership: Rev. M. F. Mommsen, C. A. Brown, of Kirkland, and Mr. Danforth; for east side membership: W. C. Wixom, of Wapato, Theodore Sires, of Yakima, and Mr. Swain, of Prosser; for American Honey Institute: Mrs. Wixom, Theodore Sires, Mr. Swain and Mrs. E. V. Ryan, of Ohop.

I. L. Neill, Washington.

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Youngest and Oldest at Convention.

Youngest and oldest—Zelma Johns, Pleasant View beekeeper, was the youngest, and L. S. Heywood, also Pleasant View, was the oldest in the game, at the Utah State Beekeepers Association convention in Ogden, December 11, 1937. In the picture at the right, Mrs. Thelma Rhees, of Ogden, looks over the records. While Miss Johns is practically a newcomer, Heywood has been in the beekeeping business for more than 35 years.

Glen Perrins, Utah.

Annual Convention of Utah Beekeepers.

Sounding a keynote for greater honey production in the Rockies during the coming year, Dr. A. P. Sturtevant, apiculturist of the Intermountain States Bee Culture Field Laboratory at Laramie, Wyoming, painted a rosy future for beemen at the annual convention of the Utah State Beekeepers' Association at Ogden, December 11.

Dr. Sturtevant described a new method of working bees under "forced draft" which calls for introducing a second queen bee into the colony instead of the usual one, and thus forcing population of the colony to high numbers.

"High population colonies yield more honey with less overhead than the same number of bees kept in normal population hives," said Dr. Sturtevant, "and in many experimental cases have produced more than twice as much honey per hive as the normal colonies." Secret of the method, which interferes with the normal instinct of the insects, he pointed out, is in manipulation of the two queens to prevent swarming. Not one of the experimental colonies has swarmed, he said.

The convention was well attended with more than eighty beekeepers of the Rockies in session. Optimism prevailed as the honey producers acted to expand their market for 1938. They voted unanimously to pay an assessment of three cents per 60 pounds of honey to finance a national advertising campaign for their product. The drive will be administered from Madison, Wisconsin, by the American Honey Institute.

The beemen criticized destructive spraying. Arthur Pledger, president, who presided, said "Spraying is getting to be as much of a fad as having the baby's tonsils out." He blamed sprays for recent bee fatalities that cut down honey production, and said agriculturalists are attacking the problem from "the wrong end." He urged the development of plants resistant to the ravages of insects.

A committee of beemen was asked to be appointed to assemble with canners and discuss the spraying situation, to boost honey production, aid pollination and cooperate in a helpful way with the growers, honeymen and canners.

Spencer Stone, of Ogden, reviewed the National Beekeepeers' convention in Washington. Mr. Stone, a delegate, was enthusiastic about the gathering.

Dr. W. H. Hendricks, of the Utah State Board of Agriculture spoke on what was being done by the board on problems of bee culture. He pointed out the fine progress made in recent years in this direction.

The speakers were introduced by President Pledger who welcomed the large group of beekeepers.

Morning and afternoon sessions were held with a dinner given during

the noon hour at the Green Gables and at Dick's cafe, with the Superior Honey Company, of Ogden, acting as hosts. During the dinners musical programs were given by Mrs. Ruth Rhees, Miss Lou Jean Cragun and Miss Zelma Johns, of Pleasant View.

New officers were elected by ballot during the session, following a round table discussion of problems. The new leaders who will preside during 1938 in charge of the state beekeepers association, are as follows:

Arthur G. Pledger, Ogden, president; M. S. Stone, Ogden, vice-president; Arthur Anderson, Salt Lake City, secretary; Reuben Rhees, Pleasant View, and O. L. Malmgren, Centerfield, directors. Malmgren is the only new member of the governing body.

Convention committee chairman were Ray Miller, Salt Lake City, resolution; Wilford Belliston, Nephi, nominations; Arthur G. Pledger, Ogden, legislative.

A site and date for the 1938 convention was not set, but will probably be held late in the year at either Ogden or Salt Lake City. Other points in the program of the association for the coming year will be outlined by the board when it meets in the near future, probably at Ogden.

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Honey Production May Increase.

With carryovers from the 1937 crop rapidly approaching the vanishing point, Iowa beekeepers probably can look forward to slightly better prospects in 1938 than they have had during recent years. Increased supplies probably will just about offset decrease in demand so that total income from the 1938 crop should be near or above 1937 levels.

The honey market appears to be capable of absorbing larger quantities of honey, at about present prices, than was produced in 1937. Average prices to Iowa honey producers on a carlot basis is about 7 cents this year. This seems to be about the ceiling price at which honey supplies can compete successfully under present demand conditions with fruits, preserves, sorghums and syrups.

The average prices per pound received by Iowa producers for the past 8 years have been as follows:

1930____5c	1934____6c
1931____5c	1935____7c
1932____4c	1936____7c
1933____4½c	1937____7c

Foreign demand was fairly strong throughout 1937, and it is expected that this demand will continue at about the same level, at least during 1938. Very little of the Iowa honey is actually exported. However, when the trade conditions warrant, honey produced on the west coast and in Texas is shipped directly to Great Britain, France and Germany, leaving Chicago and interior markets to producers in the north central areas.

There appears to be some likelihood of a small increase in supply for 1938, on the strength of the relatively favorable 1937 prices. Much will depend, of course, upon pasturage conditions, which at the present do not appear too favorable. A possible rise in the cost of bees and bee supplies may have an influence upon the expansion of commercial operations and will certainly discourage beginners.

This is taken from the "Iowa Fruit, Vegetable and Honey Outlook for 1938," published by the Iowa State College. Copies may be obtained from the Extension Service, Iowa State College, Ames.

— o —

Dr. A. P. Sturtevant, Utah Beekeepers Association convention keynoter, who pointed way toward increased honey production in 1938, as the apiary men of the Rockies convened at Ogden, December 11. Dr. Sturtevant is apiculturist at the Intermountain States Bee Culture Field Laboratory at Laramie, Wyoming.

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Virginia Meetings.

The Virginia State meeting was held in Lynchburg, on January 7, and that of the Tidewater Beekeepers' Association at Suffolk, on January 8.

Both groups endorsed the proposed new state apiarist and inspection law, which is to be introduced before the Virginia Assembly during the present session. The new law, which proposes to supersede the present inadequate one, is modeled on the most efficient provisions of other state bee laws.

The sponsors are asking for an initial inspection biennium fund of $2,500, with a state apiarist and inspectors in charge.

Sporadic outbreaks of infection in the state make stringent provisions imperative to avoid more general infections.

New officers of the Virginia State Association are T. C. Asher, of Brookneal, president, and H. W. Weatherford, of Vernon Hill, secretary-treasurer.

The Tidewater Association chose for president B. F. Porter, of Ocean View, Suffolk, and for secretary I. B. Wilson, of Smithfield.

M. G. Dadant.

— o —

Georgia Inspection Report.

Believing that your subscribers would be interested in the results of the work of the bee inspectors of this state during the season, I give you the following:

Total for

Section	No. of Colonies Inspected	Number of Colonies Infected with American Foulbrood	Number of Colonies Infected with European Foulbrood
1	798		
2	4200	92	1
3	2101	104	4
4	1893	9	
5	31566	48	494
6	16932	129	86
Bee Shippers	30957	9	222
Honey Producers	26533	373	363
Total	57490	382	585

The 57490 colonies listed as being inspected were **actually** inspected. All colonies found to be infected with American foulbrood were burned by the inspectors. All colonies found to be infected with European foulbrood were requeened. All yards in which colonies were found to be infected with either American foulbrood or European foolbrood were placed under quarantine and this quarantine was not lifted until the inspectors determined by actual inspection that there were no other colonies in that yard infected with either American foulbrood or European foulbrood.

We are not able to put all the bee inspectors in the field as early as we would have liked, due to lack of funds. However, this situation was remedied by the last session of the General Assembly which made an appropriation of $10,000 for bee inspection work. This appropriation was made due to the efforts of the bee shippers and honey producers of this state.

This is just another indication to me that when the beekeepers of any given state are thoroughly organized and when they present in the proper way their arguments to the members of the Legislature, they get favorable results. As a general rule, the members of any legislature will give

Queen Yard (9000 nuclei) of the

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more serious consideration to the arguments presented by the people affected than when the same arguments are presented by the state officials for sometimes the members of the various state legislatures have the idea that the state officials are merely asking for additional appropriations in order to build up their organizations.

I know from my contacts that officials of the various states in the Union, as a general rule, do not ask for appropriations merely to build up their organizations but are absolutely sincere when they ask for additional money and that they do not ask for more money until they are able to present facts which are based entirely upon proved facts to back up their requests.

In other words, I see no reason why the beekeepers of any given state, if they are properly organized, cannot secure funds to give the organization in the state sufficient money to give every state an adequate inspection force.

The state officials charged with the responsibility of enforcing the bee disease laws in the several states, of course, should cooperate with those interested in the production of honey and the shipping of bees.

M. S. Yeomans.

Redfield, President of Superior Honey.

F. W. Redfield was re-elected president of the Superior Honey Company early in December, according to Mr. Stone, the general manager. Mr. Stone was also re-elected treasurer and general manager; J. A. Redfield, Idaho Falls, Idaho, vice-president; T. L. Ball, Denver, secretary. These officers and S. D. Redfield, of Los Angeles, are directors. Glen Perrins,

Utah.

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Discussion on Marketing in Alberta.

Some of the potential benefits and obstacles associated with forming a cooperative marketing organization were outlined before the Alberta Beekeepers' Association at the closing session of their fourth annual convention, in Calgary. H. A. Craig, deputy-minister of agriculture, was the speaker.

Efficient management—not necessarily high salaried officials—and keeping the membership informed of all details of the business were two essentials to a successful co-operative enterprise. "If the organization is not managed properly, it would be better not to organize at all," Mr. Craig pointed out, and followed with the view that with the right man in charge, it would be possible to organize a successful honey co-operative in Alberta.

Mr. Craig said he did not favor government marketing of products, but if a cooperative were to succeed it must be operated by and for the membership, assisted as much as possible by legislation and government-sponsored educational programs.

"If you are going to start," Mr. Craig warned the beekeepers, "you must be ready for setbacks. You should start small and build gradually." The department, he added, would like to see such an organization established, and he felt sure any required legislation would receive "sympathetic attention" of the minister of agriculture.

Stanley Horne, of Campbell, Wilson and Horne, Calgary, speaking on factors tending to stabilize the honey market, offered as one suggestion the establishment of a honey marketing board. Such a body, he thought, could make an appeal to the public regarding merits of honey "in a big way" and could push advertising and publicity campaigns to emphasize the food value and cheapness of the product.

Mr. Horne pointed to the many

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2 lb. packages with young, laying, Italian queens	$2.45
3 lb. packages with young, laying, Italian queens	$3.15
Extra young, laying, Italian queens	$ .75

Book your order early, it pays.

difficulties encountered through lack or orderly marketing and thought a board, as suggested, could look after local and export supply and demand; approach governments to use more honey in provincial institutions, jails, relief camps, etc., and find more diversified uses among manufacturers.

In Manitoba, he explained, the province last year had offered to assist producers in educating the public to the use of honey by paying part of an advertising campaign. Something along similar lines might be carried out in Alberta.

R. L. Hawthorne, Taber, president of the association, spoke on the Alberta honey market. Mr. Hawthorne explained that growth of honey production in the West had been consistent, and whereas in 1920 the three prairie provinces were responsible for only two per cent of the Dominion output, that figure increased to 16 per cent by 1930, and has been gaining steadily every since. This year Alberta's production has reached a point where four or five cars have been available for export, and next year the association plans to ship to overseas markets.

The nominating committee, empowered to select officers in view of the scattered residence of the membership, announced the entire slate would continue in office. The officers are: president, R. H. Hawthorne, Taber; vice-president, C. E. Morrison, Brooks; secretary-treasurer, S. O. Hillerud, Edmonton.

—ABJ—

Nine Thousand Pounds For Winter

I had the poorest honey crop this year that I have had for twenty-four years. The fall flow was good from the smart weed, so had plenty of honey for winter feed. I left for the bees about (4½) tons. This fall I packed my bees using the middle entrance for the double brood chamber.

S. L. Hart,
Iowa.

—ABJ—

Nolan in Rotogravure

In the St. Louis Globe Democrat, and probably in other papers, on Sunday, January 2, appeared a three picture caption about bees. The first showed W. J. Nolan, of the Bee Culture Office, Beltsville, Maryland, with his veil and a handful of bees on a queen cage, with a description of his work; a picture of Dr. Burnside and his assistant; and topping out with a southern beekeeper filling a cage with bees through a funnel and empty super. Not bad publicity, except that this statement is made, "These scientists have increased the production of honey from 50 to 200 pounds per hive." (Oh my! Oh my!)

—ABJ—

Foulbrood in the State of Washington

Foulbrood has increased 11 per cent in the 68,000 colonies of bees in the state in the last two years, according to R. E. White of, Olympia, supervisor of the apiary division of the state department of agriculture. W. C. Wixom, inspector for this region, said that he had examined 2,245 colonies in Yakima and Kittitas counties and found 500 were dead, 412 were affected with foul brood and 27 were in box hives. He destroyed 270 colonies infested with foulbrood out of 8,191 yards visited in the two counties this year.

I. L. Neill,
Washington.

Honey in the Supers *Is What You Want*

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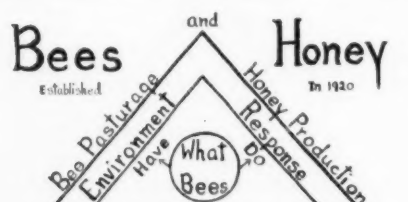

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Sample copy FREE
RALPH BENTON, *Editor*
RIVERA, CALIFORNIA

Michigan Beekeeping Schools

One-day beekeepers' schools are being conducted in the leading fruit-growing and honey-producing counties to allow both beginners and commercial beekeepers an opportunity to review the basic problems of beekeeping. Not infrequently we hear it said that the programs of our beekeepers' meetings are packed with discussion of policy to the exclusion of good old-fashioned problems of bee behavior.

These one-day schools are an answer to that criticism in that everyone present is encouraged to enter into the discussion of such problems as wintering, swarm control, the use of bees in orchards, marketing honey or disease control. Many farmers and fruit growers who would never think of attending a beekeepers' meeting come to these schools to learn what they can—and that doesn't mean that a crop of dangerous competitors will spring up to harass the already established honey producers, either.

In the important fruit-growing counties, these meetings serve as a clearing house for arrangements for bee-rental.

With the Apiary Registration Law now functioning as it does in Michigan, beginners are no longer the hazard they once were, either from the standpoint of disease control or honey marketing. This Registration Law has increased beekeeper-consciousness and tends to weed out careless beekeepers, since those who find bees unprofitable dispose of the bees rather than pay the Apiary Fee.

County agricultural agents are showing increased interest in beekeeping matters, throughout the state. In some districts, the agricultural agents of several adjoining counties are cooperating in holding a bee school in some central location. This interest is largly due to the activity of the County Beekeepers' Associations, of course, and it is a healthy asset to the growth of our industry. The County Agent can do a world of good for beekeepers in his county by recommending sweet clover for pasture and in the securing of financial assistance from the County Boards of Supervisors for foulbrood eradication. Is it not significant that there are 39 County Beekeepers' Associations and an equal number of County Boards of Supervisors appropriating from $50.00 to $500.00 each for 1938 foulbrood eradication work in Michigan?

In Michigan, at least, there seems to be a definite correlation between the development of beekeepers' organizations and the growth of the industry.

H. R. Kelty.

Feeling Attachments

Old John Hasher had climbed a tree with a sack on his shoulder to capture a swarm of bees for his neighbor. Contrary to their usual custom while swarming, the bees proved to be in stinging mood. The neighbor, safe on the ground below, heard sundry grunts and expostulations from the leafy heights above.

Finally he called: "Want me to come up and help you catch 'em, John?"

"No," said old John, "but I wish you'd come up and help me turn 'em loose.

W. H. Hull,
Virginia.

—ABJ—

Fruit, Vegetable and Honey Act

Grading of honey in British Columbia is now covered by the Fruit, Vegetables, and Honey Act, which has been passed by the British Columbia Legislature, where it was introduced by the Hon. K. C. MacDonald, Minister of Agriculture. Under provisions of the Act the existing Dominion inspection staff will be appointed as provincial inspectors. The Fruit, Vegetables, and Honey Act, a Dominion measure, has been enforced in British Columbia, for many years as governing shipments to points outside the province. Last year the province passed a regulation making the Federal Act effective within British Columbia, but the Dominion legal authorities held that this was not sufficient, so a new enabling act was introduced and passed by the Legislature.

F. N. Fullerton,
British Columbia.

—ABJ—

Unfair to Organized Bees

Old John Hasher got short of cash one day and went out to sell some honey, working from door to door. As usual in door to door selling, he met with a great many rebuffs. One lady who had often bought from him before softened her refusal by explaining that she now had so many other syrups and jams and sugars that she could find no place for honey.

"It must be quite a job to rob the hives," she remarked, by way of sympathy.

"Yes."

"I'm sorry I can't help you out."

"Oh, don't mind me, ma'am. I'll get along," said Old John. "But do you think it's quite fair to the bees?"

Crop and Market Report

Compiled by M. G. Dadant

For the February Crop and Market page, reporters were asked the following questions:

1. Has the weather been favorable to good wintering?
2. How are honey plant conditions so far?
3. Is there any evident percentage of winter loss?
4. How much honey is now on hand in your section?

Wintering Weather.

Throughout New England, the weather so far has been favorable to good wintering. It has been cold, but not too cold, and there has been some snow over various portions. Bees are coming along well on the eastern seaboard, with brood rearing already begun in Georgia and Florida. New York and Pennsylvania report good wintering conditions for bees, but through the South weather conditions have been variable, leaving the bees in some states well prepared for spring, and in others not so well prepared. Over most of Texas, weather conditions have been very favorable, as well as throughout New Mexico and Arizona. California reports excellent wintering conditions with very little, if any, winter loss in southern California, owing to the presence of eucalyptus and sage which are already yielding. In some cases where colonies have been in reach of eucalyptus, they have gathered as much as 50 pounds of honey. Central and northern California likewise are in good shape except in the flooded areas. Washington and Oregon report excellent wintering to date. In the intermountain states, the same reports hold good, with the exception of Utah, which reports adverse wintering conditions. States in the Mississippi Valley, west of the river, for the most part report good wintering conditions. Missouri and Arkansas, however, have had variable weather conditions with too many mild days to bode well for the condition of stores later on. States east of the Mississippi and along the Ohio River are in the same conditions. States in the Mississippi Valley, west of the the bees have not had flight. In all the northern states conditions have been good, both for wintering inside and for colonies packed outdoors. The winter has been steadily cold with the exception of the southern areas in these states where the bees will soon need flight. In the plain provinces of Canada, the winter has been steadily cold, but in British Columbia the weather has been mild and the stores are in danger of being consumed before they can be replenished.

Plant Conditions.

In much of New England, the honey plants are in excellent condition. In the northern part of New England, the plants are protected by several inches of snow and there is little frost in the ground. Along the eastern seaboard, the plants seem to be normal for this time of year. In New York and Pennsylvania, plant conditions are likewise good. The same thing is true for all southern states all the way across to Texas. On the other hand, reports come from Arizona that the plants are in the worst condition ever, owing to the extreme drought. Over most of California, the plants are normal. However, in some southern California districts, rain is so badly needed that plants stand at only about 50 per cent of normal. In Montana, the conditions are only fair because there has not been much snow to cover the low vegetation. "Pretty favorable" is the indication for the rest of the intermountain states. In the plains, Nebraska reports very poor plant prospects, owing to sweet clover having been largely killed out by the drought. In the rest of the states honey plants are, perhaps, 75 per cent of normal. Over the central states, conditions are extremely spotted. Frequently, plants are in poor condition owing to the open winter and cold weather. Other localities report conditions very favorable if they have moisture in the spring. The northern states, Michigan, Wisconsin, Minnesota and Dakotas, have, in the extreme northern portions, good honey plant conditions, with ground well covered with snow. However, in the southern parts, there has been freezing and thawing. Consequently the reports from these districts are not favorable. There are few complaints of drought. Apparently, there has been adequate moisture everywhere, with the exception of southern Minnesota which is quite dry. A great deal of moisture will be needed there to insure a crop.

Percentage of Winter Loss.

The New England states, for the most part, find it too early in the season to estimate possible winter loss. States along the eastern seaboard report no apparent or appreciable loss. Florida and Georgia report, of course, no losses from climatic causes, only such as arise from carelessness. New York and Pennsylvania are pretty much covered with ice and snow, but neither the bees wintering in cellar nor those wintering outdoors are suffering so far. Throughout the South there has been practically no winter loss. Whether or not spring will open up well for the southern colonies is another matter. Nowhere in California has there been appreciable loss because of climatic conditions. However, there was a terrific loss owing to floods in the San Joaquin, Kings, Kern and Kaweah River valleys which exceeded all previous records. Approximately 12,000 colonies were lost in the water during December. Farther north along the Pacific coast, there is not yet any evident percentage of winter loss. In all the northern mountainous states, it is too early to estimate winter loss, but farther south colonies have tended to suffer. The plain states report no loss so far, and the central states likewise have little to report in the matter. Throughout most of the northern states, the bees with plenty of stores are doing well so far. Again in the southern parts of some of these states, we find bees suffering because of blocked entrances and shortage of stores.

Honey On Hand.

Over practically the entire United States, as was indicated last month, the crop of honey on hand is extremely short. The states indicated will give some idea of the actual scarcity of the commodity in the hands of the producer. Maine and most of the other New England states report from 2 per cent of the beekeepers to none at all with honey still unsold. Practically all the honey along the eastern seaboard has been sold. There is a little in the hands of the small beekeepers, but not nearly enough to take care of the trade until the new crop will be ready in the summer. This is the situation in most of the remaining states.

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Rates of advertising in this classified department are seven cents per word, including name and address. Minimum ad, ten words.
As a measure of precaution to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.
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FOR FINE PACKAGE BEES AND QUEENS of the three band Italian stock. Let us fill your order. Carolina Apiaries, A. E. Cardner, Mgr., Rt. 5, Burlington, N. C.

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FOR SALE—Comb and extracted honey, f. o. b. or delivered. F. E. Leaders, Deloit, Iowa.

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NORTHERN MINNESOTA clover basswood honey. F. O'Dennell, Rush City, Minn.

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FOR SALE—Light amber bulk comb honey in shallow frames and pails. Hyde Bros., New Canton, Ill.

FOR SALE—Northern white extracted and comb honey.
M. W. Cousineau, Moorhead, Minn.

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HONEY FOR SALE—Any kind, any quantity. The John G. Paton Company, 230 Park Avenue, New York.

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FOR SALE — Fancy, well ripened, white sweet clover honey in 60-lb. cans. Extra good quality. Dadant & Sons, Hamilton, Ill.

HONEY PACKERS—Write us for prices on carload lots of California and Western Honeys. We stock all varieties. HAMILTON & COMPANY, 108 West Sixth St., Los Angeles, California.

FOR SALE—Clover extracted in sixties. C. Holm, Genoa, Ill.

HARRIS, Michigan Clover Extracted in new sixties. J. N. Harris, Saint Louis, Michigan.

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WANTED—Car lots honey; also beeswax, any quantity. Mail samples, state quantity and price. Bryant & Cookinham, Inc., Los Angeles, California.

WANTED — White and Amber Extracted Honey, any quantity; also beeswax. Write THE FRED W. MUTH CO., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Comb, chunk comb, white and light amber extracted honeys. Any amount. Central Ohio Apiaries, Millersport, Ohio.

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48 COLONIES Italian bees with equipment, Modified Dadant hives, in good condition. Subject to inspection. Harry Thomas, Lakewood, Wis.

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100 COLONIES of bees and equipment, or without equipment, disease free. My object in selling is my age. All fine brood combs. J. W. E. Basham, Barstow, Texas.

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WANTED—To hear from owner of farm for sale for spring delivery. Wm. Hawley, Baldwin, Wis.

WANTED—Package man for season 1938. State age, size and experience. Also wages expected. Room and board furnished. References exchanged. J. M. Cutts & Sons, Rt. No. 1, Montgomery, Ala.

WANTED—Industrious young man, fast worker, clean mental and body habits, as a student helper in our large bee business. Will give lessons, board and small wages. C. M. Boothby, Goodridge, Minn.

WANTED — One experienced man, one helper. Write fully.
Edw. Klein, Gurnee, Ill.

WANTED—Queen breeder or experienced beekeeper to do general work for spring season. W. O. Gibbs, Brookfield, Ga.

FAMILY, experienced, successful with bees, gardening, fruit, poultry, for small, partly irrigated farm, good buildings; share rent; boys, some means desirable. Care of American Bee Journal, Box Ill.

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DIFFERENT, that's all. Written and published for the instruction of beekeepers. 52 pages of breezy entertaining beekeeping comment each month. One year, $1.00; two years, $1.50. Sample, 3c stamp.
The Beekeepers Item, San Antonio, Texas.

ATTRACTIVE PRICES on bee supplies and comb foundation. Send for catalog. Saves you money. THE FRED W. MUTH CO., Pearl and Walnut Sts., Cincinnati, Ohio.

FOR SALE—Queen mailing cages. Material, workmanship and service all guaranteed. Write for quantity prices.
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YOUR WAX worked into high quality medium brood foundation 15c lb; 100 lbs. $11.00; thin super 22c. Fred Peterson, Alden, Iowa.

FOR SALE—Comb foundation at money-saving prices. Plain, wired and thin section, wax worked at lowest rates. Combs and cappings rendered. E. S. Robinson, Mayville, N. Y.

$11.00 is our price for working 100 pounds of your wax into medium brood. Our large modern bee hive factory is manned by experienced workers milling thousands of pounds of comb foundation and hundreds of thousands of board feet of lumber into beehives annually. **Quality at Low Cost** is our motto. Free catalogue. Free shipping tags for your wax. The Walter T. Kelley Co., Paducah, Kentucky.

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MISCELLANEOUS

PLANS FOR POULTRY HOUSES — All styles; 150 illustrations. Tells you the type to build for your particular locality. Secret of getting winter eggs, and copy of "Inland." Send 25c.
Inland Poultry Journal, Spencer, Indiana.

BOOK BARGAIN—Very slightly damaged copies of Beekeeping in the South by Kenneth Hawkins, cloth bound, published to sell at $1.25, price postpaid only 29 cents.
American Bee Journal, Hamilton, Ill.

THE BEE WORLD—The leading bee journal in Great Britain and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy, post free, 12 cents stamps. Membership of the Club, including subscription to the paper, 10/6. The Apis Club, The Way's End, Foxton, Royston, Herts, England.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so, send us a list.
American Bee Journal, Hamilton, Illinois.

From an Old Bee Book

The following description of the nature and cause of foulbrood is from an ancient book:

"The bees have a disease which is called foulbrood. It smells terrible and is the right plague. As I have been informed it comes from the following causes: If there is some place a dead dog lieing upon which the bees fly in spring to collect substances from which they nurse the brood, this is where the poison comes from.

"Every dead dog should be buried on account of the bees. Otherwise all the bees in a valley or village would be poisoned as happened here."

The writer then went on to tell how the wardens had orders to kill stray dogs to increase the game resources but that they had neglected to bury the ones killed with the result that there was a plague among the bees.

They did however, recommend that "after all the honey is cut out, a new hive should be given." While we know more about the cause of disease than was known then we have made but little progress in treatment.

The most interesting chapter in the book is the one telling how to use smoke to control the bees. The following sentence indicates that they were not far from the idea of the present day smoker:

"A busy beekeeper should always have a bellows in his garden so he can get quick smoke. There should always be one container filled with pieces of willow wood and the other with only pine wood but one should not put much at once in the smoke can."

Written by M. Gandernackee, Schoolmaster at Rosswirtze 1682.

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2 lb. and queen	$2.45
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Queens	$ .75

Special Price in Large Lots.

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Discount to dealers or on large orders. Orders booked without deposit

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Hive Lifter

WHY demoralize your colonies by tearing them down! Just clamp on next to the brood chamber with this hive lifting machine, slip in a super where it does the most good.

AT ANY TIME inspect the brood nest without disturbing the rest of the colony. Quickly operated. Prevents robbing.

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The Postscript

Gossip About the Office in the Making of the Magazine

Bonnier in his "Flore Complete" tells how a perfume is made from the flowers of the yellow flowered sweet clover (**Melilotus officinalis**) by distilling them with water. Perhaps some of our experimentally minded readers would like to try it.

—ABJ—

He also ascribes medical properties to this plant and states that it is used in infusion against dysentery and intestinal irritation. The blooming plant is described as used to make plasters against rheumatism and inflammatory tumors, and the seed in the preparation of gargles. I am unable to find anything to indicate that American medical practice gives any such recognition to sweet clover.

Both the old world and the new regard it highly as a source of honey and it is widely heralded as a bee plant.

—ABJ—

A. Z. Abushady, of Alexandria, Egypt, well known to beekeepers as the founder of the "Bee World" and later of the "Bee Kingdom," is the author of a little book of essays on social problems, entitled "At Random." It is published by the Culture Circle of Alexandria. He discusses such questions as Genius, Democracy or Dictatorship, Equality Between the Sexes, and Economic Democracy. He is an advocate of social credit which endeavors to emancipate man from his own economic slavery. Present day problems have turned the thoughts of many men to possible ways of escape from the difficulties which surround us.

—ABJ—

Alpha sweet clover appears to be a valuable acquisition for the north country. With many fine stems instead of one main stem of woody character of the common sweet clover, it provides much better forage. Clarence Farnsworth, of McLeod, Montana, writes that he tried a small plot the past season and that it exceeded his expectations. He plans to plant a larger area next season. He also reports success with sainfoin in small trial plantings. We would suggest that beemen in the northern plains and the Rocky Mountain region give it a trial.

—ABJ—

Farnsworth reports some interesting although unpleasant experiences with skunks and woodpeckers. The woodpeckers made about 90 holes in his beehives which required covering with tin and he caught eleven skunks in one small bee yard. Although woodpeckers are very plentiful in my grove, I have never had one bother a beehive. I have visited apiaries where they got started at the hives and did considerable damage. It would be interesting to know how frequent such cases are.

—ABJ—

An Iowa friend of mine, who retired from school teaching to take up fruit growing, commented on the numerous obstacles, in rhyme, somewhat as follows: "They've found the bug, that eats the bug, that fights the bug, that bites us. They've traced the germ, that kills the germ, that chews the germ that smites us." After several similar descriptive paragraphs he continued, "But still these bugs, microbe thugs, in spite of drugs, combat us."

—ABJ—

Our friendly correspondent, Pedro Provensal, of Uruapan, Michoacan, Mexico, reports a honeyflow beginning at Thanksgiving and that he extracts about two cans of fine honey every Saturday. During the week he is a bookkeeper in town and at week-ends he is a beekeeper among the avocado trees with his bees working bananas and coffee. When his letter was written on December 24, he said that roses, violets and orange trees were in full bloom.

S. L. Hart, of Waterloo, Iowa, reports the poorest honey crop the past season in 24 years. Fortunately there was sufficient fall flow to leave the bees well supplied for winter. Reports of a short crop have been very general but in too many cases there was but little fall flow and the bees were in poor condition for winter. In the experimental apiary at Atlantic, clusters were light for lack of the usual fall stimulation and but little reserve pollen was stored. We fed sugar syrup to make up stores but could do little to make up for lack of pollen.

—ABJ—

Jes Dalton, of Kenner, Louisiana, sends at New Year fresh blossoms of maple in the same letter with goldenrods and asters which he found blooming at the same time. Now we are trying to decide whether it is early spring or late fall down in Louisiana. With maple supposed to bloom the first thing in spring and goldenrod and aster the last thing in the fall we are hardly prepared to find both in bloom at the same time.

—ABJ—

Maple butter, maple sugar, maple syrup and maple candy are the products which came in a beautiful Christmas package from Quebec. Maple butter is a new thing to me and it is about the finest spread one can well imagine. There should be an unlimited market for such an item. When the beekeepers learn how to put up granulated honey in equally attractive form they can expect a large demand. Thus far great difficulty has been encountered in maintaining the buttery quality of the honey spread.

—ABJ—

Now and then we hear of a beekeeper who is making a serious attempt to improve the bee pasture of his neighborhood. One such is F. J. Watt, of New Richmond, Ohio. He is planting Chinese vitex, catnip, motherwort, coral-berry and cleome on unused land. These plants are among the most valuable sources of nectar in a favorable environment and it seems probable that Mr. Watt may be able to make a substantial improvement in the bee pasture of his locality.

—ABJ—

A Wyoming beekeeper asks "what is the coriander mentioned in the January Journal." Coriander is an herb which has been cultivated for centuries and was one of the bitter herbs ordained by the Jews to be eaten at the Passover. Ancients sprinkled the seed over meat to keep it from spoiling in summer. In this country it is used in medicine, with other drugs, to make them more agreeable or to correct their griping qualities. Small quantities of the oil distilled from the seeds is used in perfume. The plant is cultivated on a large scale in Europe and North Africa. Reports from abroad indicate that it is of some importance as a honey plant.

—ABJ—

When N. E. Hansen visited Siberia in 1906 he found a yellow flowered alfalfa, **Medicago falcata,** in a region of extreme cold and of light rainfall. He brought it to this country and introduced it to American agriculture. Because of the tendency of the seed to shatter thus making it difficult to harvest it soon was lost to sight.

—ABJ—

E. O. Boyd, of northern Alberta, writes me that he has a plot of this alfalfa which was planted in 1914 and is still thriving although no other alfalfa of the many kinds that he has tried has lived for more than three years. Twenty-four years is a long time for a field of alfalfa to live under such conditions.

FRANK C. PELLETT.

THIRTY and FIFTY FRAME

Radial Honey Extractors

Remember:

■ *The greater the extractor capacity*
The more work time there is ■

The practical beekeeper who uses a Woodman Radial knows that it gives him more time for the work of uncapping and super handling; that he can get more honey out in a day's labor. He wants to avoid the waste time in stopping, starting, loading and unloading extractors of small capacity.

By loading thirty or fifty combs of honey at a time the other work is uninterrupted. Small capacity extractors may mean as much as an extra worker's time for operation.

One producer of 22 car loads of 36,000 lbs. each, in 1936, used several Woodman Fifty Frame Radials

Send for our extractor catalog with ten different sizes and styles of extractors to suit any requirement.

A. G. WOODMAN CO., Grand Rapids, Michigan, U. S. A.

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BUYERS ATTENTION: After 20 years' experience as a commercial beekeeper I feel justified in saying, the 3-banded Italians I have are as good as any on the market. I assure you that all orders or inquiries will receive my prompt and personal attention.

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AMERICAN BEE JOURNAL

The Oldest Bee Journal in the English Language

ESTABLISHED BY SAMUEL WAGNER IN 1861

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American Bee Journal

Vol. LXXVIII—No. 3 Hamilton, Illinois, March 1938 Monthly, $1.00 a Year

A Hardy Alfalfa

ABOUT forty years ago, Dr. N. E. Hansen visited Siberia in search of hardy forage crops for the dry northern plains region. Among other things he found a yellow flowered alfalfa in the province of Semipalatinsk in Russia. It was a wild plant and for that reason it was difficult to secure enough seed for extensive trial.

Because of the fact that the plant, *Medicago falcata,* related to the common alfalfa, was found growing over a wide area with extreme climatic conditions, it attracted much interest on the part of farm crops specialists and several other lots of seed were later secured.

Semipalatinsk is a region of very light rainfall, ranging from about seven to ten inches annually, and with winter temperatures as low as fifty degrees below zero. The hardiness of the plant could hardly be questioned and it remained only to determine its value as a farm crop under mid-western conditions.

During the years when the plant was under test, seed was scarce and very high in price which made it difficult to establish the new introduction very generally. To add to the difficulty the seed has a tendency to shatter out as fast as it ripens thus preventing the harvest of a full crop in the usual manner. Seed of a field crop with this habit could hardly be expected to ever become low in price.

When grown in comparison to other strains of alfafa where moisture was sufficient the yellow flowered alfalfa made a poor showing, yielding only one cutting where the others gave two. It is not surprising that interest soon lagged and the new alfalfa was lost to sight.

Then came the series of dry years when so much of the common alfalfa was lost for lack of sufficient moisture and attention was again turned to the hardy plant from Semipalatinsk.

For many months this magazine has searched for a source of seed of this hardy alfalfa with yellow flowers. Only two small fields have been found as a remnant of the descendants of the early introductions. One is in western South Dakota where Dr. Hansen reports it to be the only survivor in a region where all other alfalfa has died for lack of rain.

The other is in northern Alberta where it has been subjected to extremes of heat and cold and drought for all these years. The owner writes that this field is still thrifty after twenty-three years, although none of the many other strains of alfalfa that he has tried has lived for more than three years. Every year it has yielded a crop of seed or a crop of hay and in addition it has provided winter pasture for his livestock for seventeen years.

The common alfafa will stand but little pasturing and soon disappears when subjected to grazing. Had western farmers planted

Bees in the Okanagan work harder than in any other part of British Columbia. This is because honey is held in the cells by capillary attraction and owing to the heat in the interior, a higher percentage of water must be evaporated out of the honey before it will stay in the cells. The bees do this by fanning the water out with their wings.

There are 530 colonies within three miles of Vernon, producing 20 to 40 tons of honey annually. This honey has for years taken most of the premier awards at coast exhibitions and has an average solid content of 84.6%.

Altitude is another factor in producing first grade honey and the distance above sea level of the north Okanagan makes the honey lighter and improves the flavor.

F. H. Fullerton,
British Columbia.

♦

On page 586 in the December issue, in regard to the wind charger killing bees, we wonder if the bees flew directly into the revolving blades on their line of flight or if the motion of the wind charger blades aroused the temper of the bees so that they attacked it deliberately. The reason we mention it is because we once made a wind break of burlap and canvas, and in the spring a strip of the windbreak about four inches by twenty-four was torn in some manner, causing it to flap up and down in the wind. The bees attacked it and covered it thick with stings.

Alfred P. Johnson,
Illinois.

♦

Soaking rains of early December have put bee pastures of Utah in excellent condition for next year's crop. Production of comb honey has been unusually light. Colonies are generally heavy with honey and went into winter quarters in better condition than a year ago. Weather has been ideal and young queens in Utah in December were still laying in a number of colonies, which may result in heavier consumption of stores than usual.

Glen Perrins,
Utah.

I had to quit beekeeping. Soon be 69 years old and too hard work for one when you get stiff joints. Have been at the game for 27 years and often had to help others with their problems.

Ole N. Stromseth,
Minnesota.

♦

In the old-time horse and wagon days it was quite a chore to make the outyards, particularly when we had to consider the relationship between the horses and possibility of angry bees. In this day of good roads and trucks, fifty miles means little, if any, more than five miles in former days. But now there are other difficulties. Locations are not secure; the marketing territories are not exclusive. Perhaps the old adage, "No great loss without some small gain," should be reversed to "No gain without some loss." The universal law of balance still prevails.

A. G. Woodman.

♦

Bees are wintering fine up to now, plenty honey and bees in hives, awful dry weather condition here.

Fred Drury,
Missouri.

♦

My bees didn't do well the past season, too much cold and wet weather during July and August. I got some honey and increased from 11 to 21, not so bad after all. Most of them went into the winter in good shape. F. E. Souders,
Ohio.

♦

We are often asked what are the requirements for a good beekeeper. Who can answer this question! Certainly they are not intelligence and education alone. Some of the best minds, combined with energy, industry and thrift have made dismal failures.

An immigrant came to this country about twenty-five years ago. He had helped his father with bees in the old country and, as soon as he had found a job in a factory here, secured a colony of bees of his own. Gradually he has worked up to about 100,000 pounds annual production and bids fair to become one of the largest and best producers in Michigan. During this time we have known of several beekeepers, native born and well educated, with ample financial backing, who have attemped beekeeping in quite an extensive way, who have completely failed and are now out of business.

A. G. Woodman.

the Semipalatinsk alfalfa instead of the common kinds they would have felt the drought years much less keenly.

All reports agree that this yellow flowered Semipalatinsk alfalfa is one of the best for bees. Once it comes into common use in the dry areas the beekeepers can expect more stable bee pasture.

Because of the failure of so many alfalfa fields on western uplands there is a new interest in this immigrant from Siberia and if seed can be found more of it is likely to be planted. Farmers want something which will stand pasturing and still live. Apparently drought has not yet been sufficiently severe to discourage this plant.

—ABJ—

Honey Prices

IN a recent publication by the Iowa State College of Agriculture entitled, "Fruit, Vegetable and Honey Outlook for 1938," Alvin E. Coons comments that the honey market appears to be capable of absorbing more honey at about present prices than was produced in 1937.

It is interesting to note that Coons regards the carlot price of seven cents per pound paid Iowa producers in 1937 as about the ceiling price which will permit successful competition with fruits, preserves, sorghums and syrups.

The ceiling price of any product is determined by the buying power of the consumer. Price is not a matter of serious concern until the budget begins to feel the pinch. When income is no longer sufficient to cover all the things needed, there is a tendency to eliminate items selling at a relatively high price.

Beekeepers have long ago discovered that when honey reaches a price which is relatively higher than other sweets, the housewife will choose the other and dispense with the honey. The same thing holds true in every field as the automobile manufacturer recently discovered when higher prices were announced to meet increasing costs of manufacture.

—ABJ—

Is Honey Poisoned By Spray?

RECENTLY a letter came to the editor calling attention to a statement in Consumer's Digest to the effect that "honey made by bees working in orchards which have been sprayed may contain a dangerous amount of lead."

This seemed to us like a surprising statement to come from such a source. There has been much agitation about the danger to bees from such poison, but it has been assumed that those getting the poisonous nectar are killed before they have opportunity to deposit it in ripened honey. Millions of bees have been killed by spray poison and in some cases whole apiaries have been wiped out but we had never heard of a case where the poison was detected in honey which went to market.

Seemingly at some point in the process of ripening the honey the bees have died without finishing their task. To make sure on

this point a letter of inquiry was addressed to Jas. I. Hambleton of the Bureau of Entomology who replies as follows:

> "We are not aware of a single reference in the scientific literature stating that lead has been found in honey as a result of bees working on sprayed fruit trees. Under the circumstances I feel that the statement is unwarranted. There may be circumstances, of course, when this will occur, but to our knowledge no instance of it has been reported."

There can be no question but that bees are killed by poison used in spraying fruit trees, but those which gather it die without storing the poisoned nectar in the form of honey. If any case of sealed honey containing poison from this source has ever been found we would very much like to know of it since the public should be protected against any such danger. Likewise the beekeeper should be protected against ill-advised statements which alarm the consumer of honey.

—ABJ—

Banat Bees

SINCE the passing of T. W. Livingstone, of Georgia, some years ago, we have no one to boost the Banat bees. He kept this race exclusively in his apiaries and contended that they were gentle and good honey gatherers. Of late there has been increasing interest in the grey bees of central Europe and we hope that some provision will be made to give them all a fair test under various American environments. The beekeepers want to know more about the merits of each variety.

—ABJ—

A Beauty Hint

ON the editor's desk is a clipping without any mark to tell him where it comes from, but indications are that it is from one of the syndicated beauty columns used in present day newspapers.

Under the picture of an attractive young lady appears the following.

> "My beauty hint is a little unusual because it isn't something applied externally.
>
> "Each morning before breakfast I combine the juice of one medium sized lemon with one tablespoon of honey and drink it.
>
> "This mixture seems to have qualities that aid in reducing the weight and assist one in keeping the figure, no matter if one eats three square meals a day. Added to that I think it helps keep my complexion clear."

One sees such suggestions in the newspapers with increasing frequency and repeated often enough they will have some effect on the habits of the young women of the rising generation. Certainly no harm is likely to come from the use of lemon juice and honey as a beauty aid.

On one of those blistering days during the drought a fire swept down on old John Hasher's bee yeard. John filled his pockets with blasting powder from a keg that he kept in his honey house, and called on a neighbor for help. Together they ran to the beeyard. John cut a hole in one of his pockets and began running in circles around the yard. After about the second time around he grabbed his pocket to check the flow of powder from it; dropped a lighted match behind him, and jumped to one side like a rabbit trying to shake a dog off his trail. None too soon, either; for as the match came in contact with the powder a line of fire shot around the bee yard faster than the eye could follow.

"Saves time when you're back-firin'," explained John.

The neighbor was impressed. "Give me some," he said. "Maybe I can back-fire my barn."

He did just as John had done, except that when he jumped off the trail he forgot to check the flow of powder from his pocket, with the result that he was not only surrounded by a wall of fire, but on fire himself. John dashed in with a wet blanket, brought his neighbor out and pitched him pitched him into the creek.

"You saved my life!" gasped the neighbor, as he crawled out.

"Couldn't help it," the old man spat back. "You had the matches that I'd brought to light the smoker with; and I'm going to need that smoker." Walter H. Hull,
Virginia.

♦

A new bulletin, "Catalog of the Flora of Texas," by V. L. Cory and H. B. Parks has recently appeared from the Texas Agricultural Experiment Station at College Station.

It is a book of 130 pages and probably contains the longest list of native plants common to any state except California. A total of 5099 different plants is certainly a formidable number. Texas is of such vast extent that it has required an immense amount of labor to compile the list. The authors have spent much time in the field and traveled many thousands of miles in an effort to discover the natural range of all plants native to the state.

♦

The price of honey has been terribly low here, a cent an ounce, with sections running from 13 to 16 ounces, nice, clear sweet clover honey. My bees are in a well ventilated cellar with food chambers. Last year the bees were in Montana on irrigated land. Too dry here to raise anything. Have not had a good grain crop in nine years.
A. W. Mann, North Dakota.

The two large flowers, one with calyx removed, are of common red clover, the corolla length averaging about 9.5 mm. The two smaller flowers, one also with calyx removed, are of the Zofka clover, the corolla length average around 6.5-7 mm. (Photo by Dr. J. N. Martin.)

Why the High Price of Red Clover Seed

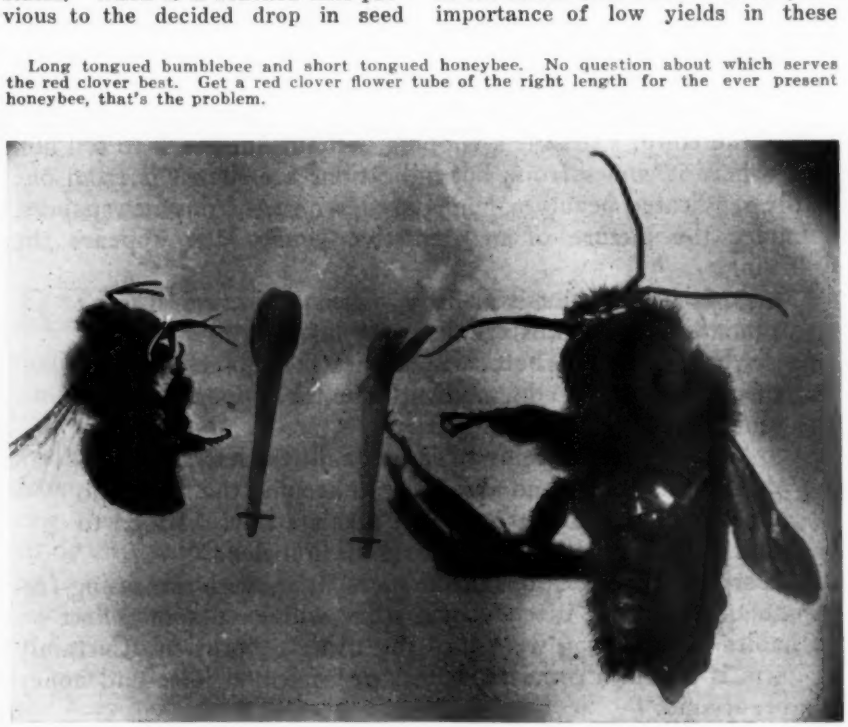
By Dr. John N. Martin,

Iowa State College.

WHEN it takes 50 bushels of corn or a 300 pound hog to buy one bushel of red clover seed, there is reason to be concerned about the future of red clover. Such a price for seed will practically doom this crop to extinction. The present exorbitant price, of course, is traceable to a scarcity of the seed. The production of red clover in the United States dropped from 1,172,400 bushels in 1936 to 781,400 in 1937 and the 1936 production was 350,580 bushels less than the average for the five year period 1928-1932. For the shortage of seed the drought seasons are much to blame. The failure to get stands during the drought years coupled with the high price of seed has discouraged the seeding to red clover and resulted in a reduction of the acreage of this crop. The acreage of red clover dropped from 1,044,100 acres in 1936 to 466,100 acres in 1937*. The drought of 1936 was the straw that broke the camel's back. Despite the drought years previous to 1936 both the acreage and seed production suffered no drop so marked as in 1937.

For the shortage in red clover seed there is another cause more fundamental and of longer standing than the drought seasons. It is the low yields per acre of red clover seed over all the middle and eastern states. When it is realized that previous to the decided drop in seed production in the midwestern and eastern states beginning in 1936, 85 per cent of the red clover seed produced in the United States was grown in the states east of the Rockies, the importance of low yields in these

Long tongued bumblebee and short tongued honeybee. No question about which serves the red clover best. Get a red clover flower tube of the right length for the ever present honeybee, that's the problem.



*The figures include those for both red and alsike clover, but those for alsike are relatively small and do not invalidate the correctness of the comparison.

states on our supply of seed is then apparent. If the average yields per acre of red clover seed were four or five bushels as they are in Colorado, Idaho, and Oregon, instead of less than one and one-half bushels, there would be no serious shortage of seed now and up to 1936 red clover seed should have been ample to meet all demands at reasonable prices. This low yield in the middle and eastern states is not a situation that has come about in recent years. Our records of yields as far back as they go show that we should have been much concerned about the low yields of red clover seed in these states a quarter of a century or more ago. Low seed yields in the majority of the red clover growing states, a shortage of seed and high prices have prevailed for two or more decades. The effects of the extremely unfavorable seasons beginning with 1930 have brought a chronic ailment to a critical acuteness.

How Much Should An Acre of Red Clover Yield?

An average yield per acre of red clover seed should be approximately 12 bushels. This is easily calculated from data that has been collected by various investigators. We know that each flower is capable of producing one seed and the average number of flowers per head is 100. On the average, therefore, each head of red clover should produce approximately 100 seeds. From data on the average number of heads per plant and number of plants per square foot, the number of seeds per acre is easily obtained, which divided by the number of seeds in a pound, information we have, the bushels per acre are readily calculated.

Now the proof that this is not mere theory is that in the mountain states, Colorado, Idaho and Oregon, occasionally more than 12 bushels per acre are obtained from stands no better than those common in Iowa. From Washington 16 bushels per acre are reported. Of course these are exceptional yields, the average yield per acre being about 4 or 5 bushels in the western states, but they demonstrate what red clover is capable of doing in the way of seed yields. If the average yield in the states east of the Rockies, where 85 per cent of the red clover seed in the United States is produced, could be raised from its low average of less than 1½ bushels per acre to 4 bushels, our supply of seed for the United States would be more than double the average previous to the drop of 1937. With such a seed production (2½ to 3 million bushels) the acreage could be more than doubled, and the price still remain in the bounds of reason.

The uniformity of low yields over the states east of the Rockies is rather striking. There is a variation of not much more than a bushel per acre. The higher yielding states with an average of approximately two bushels per acre are Minnesota and Wisconsin. It is interesting to note that Iowa which is considered an exceptional agricultural state, has an average yield of barely a bushel per acre and vies with Kansas for the foot of the class in red clover seed yield.

Let us compare the situation in red clover seed production with the yields of corn over the United States. There are no discrepancies in which one state has an average yield per acre of corn four times that of another state. To make the comparison more exact, there is no variation in corn in which only one large ear per stalk is produced in one state and four ears equally large per stalk are produced in another state. To furnish the elements of nutrition and for storage necessary to properly mature one large ear taxes a corn plant of the present varieties about to the limit. In the further improvement of corn yields, a next step may be to produce corn plants with root systems, stems, and leaf areas of sufficient capacity to produce two large ears. In red clover it is not a question of increasing the capacity of red clover to yield more seed, but a question of using the capacity it already has. In terms of corn, we harvest in red clover cobs almost bare, maturing only one kernel for every 12 kernels a normally developed ear should have, and for the reason that 11 kernels out of every 12 did not get fertilized.

Why Is Pollination and Fertilization So Poor In Red Clover?

Fertilization in flowers presupposes effective pollination. For all the flowers of a head of red clover to set seed, each individual flower of the head must be pollinated and must be pollinated with pollen that is potent on the stigmas of the flowers of the particular head being pollinated. In tomatoes, tobacco, melons and many other plants where the pods or fruits have many seeds, one pollination results in the formation of a hundred or more seeds, but in red clover where each flower produces, with few exceptions, only one seed, the production of a 100 seeds requires 100 individual flower pollinations. The production of one pound of red clover seed requires approximately 272,400 individual flower pollinations. It is apparent that in red clover the ratio of pollinations to the number of seeds produced is at its maximum.

Another complication that enters into the picture is the peculiar structure of the red clover flower. Like the flowers of sweet peas, beans and most legumes, those of the red clover are butterfly-shaped. They have one broad upper petal (standard), two opposite the standard and so joined that they form a keel-shape structure in which the pistil and stamens are enclosed, and two side petals known as wings. Now the stamens and pistil are so thoroughly enclosed in the keel that no pollen can get out of the flower or get into the flower until the keel is sprung down sufficiently to allow the stamens and pistil to flip upward out of their enclosure into the open. This process of springing the keel downward until the stamens and pistil spring out of their enclosure is spoken of as tripping the flower. It is the work of insects, nearly entirely of bees, and is accomplished when the bee pushes its proboscis into the tube of the flower to get the nectar or pollen. It is at the time the stamens and pistil have sprung out into the open that pollination occurs. As the stamens flip up pollen is thrown from the anthers into the air and against the abdomen of the bee where much of it adheres and is carried by the bee to the stigma of other flowers. At the same time the stamens flip into the open and scatter their pollen, the stigma of the pistil becomes dusted with pollen flying from the anthers but also with pollen from the body of the insect provided the insect has visited flowers previously. The red clover flower is so constructed that when the flower is tripped the stigma comes in contact with the bee's abdomen and in this way receives pollen from the bees.

A third feature and one that complicates the case most of all is the self-sterility of red clover. Unlike beans, peas, sweet clover, and many other legumes in which the pollen of a flower is potent on its own stigma, red clover tolerates, with rare exceptions, only cross pollination. Not only is the pollen of a flower impotent on its own stigma, but it is impotent on stigmas of all flowers of the same head, and furthermore impotent on the stigma of flowers in all other heads borne on the same plant. To become effectively pollinated, the stigma at the time of tripping must receive from the body of the bee it contacts, pollen that the bee received while visiting flowers of other red clover plants. A successful pollinator of red clover, therefore, must do two things. First, it must trip the flower so as to permit the stamens and stigma to spring into the open from their enclosure in the keel. Second, it must deposit on the stigma pollen which has adhered to its body while visiting flowers of other red clover plants.

Now bees, which are the only pollinators of red clover of any consequence, visit flowers for pollen and nectar but mainly for nectar. Naturally bees are most interested in those flowers where they can

secure the most nectar. That red clover flowers have nectar is evident from the fact that bumblebees take to red clover like ducks to water. If bumblebees were sufficiently plentiful to visit all red clover flowers, the yields per acre would give us no worry. But bumblebees are few and becoming fewer, and we can not increase their population as we can that of honeybees. Consequently we have to leave bumblebees out of the picture, except to save them whenever we can, and rely upon the honeybee to save red clover from extinction. Another evidence that red clover produces nectar is that the nectar can be seen through the transparent wall of the corolla tubes.

Why Honeybees Do Not Take To Clover Like Bumblebees Do.

Here is the kernel of the problem. The reason that honeybees do not have the preference for red clover that bumblebees do is the inability of honeybees to reach the nectar. The average length of the corolla of the red clover flower is 9.5mm., while the length of the proboscis of the honeybee is approximately 6.5 mm. Add to 6.5 mm. one millimeter as an allowance for the distance the bee pushes its head into the top of the corolla tube, and the reach of the bee approximates 7.5 mm. Substracting 7.5 mm. from 9.5 mm. leaves a difference of 2 mm. which is the distance the proboscis of the honeybee falls short of reaching the bottom of the corolla tube.

The next thing to consider is the height to which the nectar rises in the corolla tube. If it rises to a height of more than 2 mm. then it comes within the reach of the honey bee, sufficiently at least for the bee to get a sip. But the results of many measurements show that the average height to which nectar rises in the corolla tubes of red clover is approximately one millimeter. Rather frequently it rises as high as two millimeters and occasionally as high as three and even four millimeters, while, on the other hand, in many flowers its rise falls short of one millimeter.

Now with a proboscis of about 11 mm. in length, the bumblebee has more than ample reach to go to the bottom of a red clover flower and get all the nectar to the last drop. But the honeybee with its less adequate equipment is not so fortunate. Occasionally there is a flower from which it can get some nectar, but in by far the majority of cases its endeavors are rewarded by seeing what it can not get, by the satisfaction of the window shopper, and possibly by a collection of pollen for the brood. In irrigated regions, like those of the western states where red clover seeds well, the scarcity of wild plants and other plants in bloom limits the honeybees in their choice of nectar plants, and forces them to work red clover. This is the explanation of the high yields in the western states. In the Middle West and eastern states where there is a greater abundance and variety of wild plants and cultivated crops, the honeybees have more freedom of choice and prefer other plants to red clover.

What Is the Remedy?

One remedy would be to develop a condition like that in the western states and force the honeybees to work red clover. Such is the procedure in Russia where the experiment stations have the increase in yield of red clover seed as a major project. The plan is to grow red clover in such large solid areas that the competitive plants are excluded beyond the convenient reach of the honeybees with which the clover areas are amply provided. This plan, as shown by the Michigan station, would meet at least with considerable success in this country.

But the most hopeful outlook for the solution of this serious problem is in the replacing of our present strains of red clover with strains having shorter corolla tubes like those of the Zofka red clover. In the Zofka red clover where the corolla tube is not longer than the reach of the honeybee, the records of honeybee visitations and amount of seed produced well show that the shortening of the corolla affords the remedy. Of course this short flowered strain of red clover must meet other requirements. It must meet the requirements for hay production, and in resistance of drought, heat, cold, leaf hoppers, and other pests. The small area of this clover which Mr. Frank Pellett planted on his place last spring stood the drought, heat, and leaf hoppers as well as, if not better, than our commonly grown red clovers, made a good crop of hay and a recent inspection reveals no winter injury up to date. This clover at present appears very promising. If it does not meet all the requirements, then by crossing it with our good commonly grown strains, there is the possibility of obtaining a strain having the desirable feature of a short corolla in combination with the desirable features of our better commonly grown strains. In producing a short flowered red clover that the honeybees can work, which Zofka has done, it would seem that the remedy is at hand and the major battle has been won in solving the problem of increasing our yields of red clover seed.

The Interest of the Apiarist

This discussion so far has dealt with the problem from the seed and forage aspects, but the apiarist is an important figure in the picture. He must provide the honeybees. If such a red clover as the Zofka strain, upon which the seed yield depends upon honeybees, replaces the common types of red clover, then no doubt the honeybee population will have to be doubled and tripled. This should work to the advantage of both the seed growing and honey production industries, but would require cooperative arrangements where the two industries were separate, whereby both could realize on the services of the bee in the production of clover seed.

There are a number of records reporting the number of flowers visited per minute by both bumblebees and honeybees. The bumblebee visits 35 flowers per minute and the honeybees around 20 flowers per minute. Otherwise stated the honeybee can produce 20 clover seeds per minute if it is given the opportunity. Now from the data we have it is easy to estimate how much seed one honeybee can produce over a certain number of days working so many hours each day, during July, August, and September, the months covering the flowering period of red clover. Basing the calculations on an eight hour day with an allowance of one third time off for going to and fro and for unfavorable weather, a honeybee can produce during the flowering period of red clover in the neighborhood of two to three pounds of seed which at the present price would be worth one dollar. Such an estimate may be considerably off, for bees know no eight hour days and of course they might not and probably would not, limit themselves to red clover. But if only a few cents per worker bee could be realized for services in red clover seed production, the income per colony would be greatly increased.

———*ABJ*———

If the Poor Guy Loves to Talk

Harry Canfield, Dallas City, Ill., beekeeper and deputy inspector for Hancock County was over near us on December 23d hunting crows. He drove in to our factory and visited with us a few minutes. It was the first time that Harry didn't outtalk us on some question or other, but it was mainly because of a strained vocal cord and his doctor had instructed him not to speak a word for thirty days. Harry still had twenty-seven days to go on his silent diet, but we hope he made it and the noise box gets O. K. as we always rather like to hear Harry's voice.

Flighty Sez:

March 1

Aunt Liz wuz telling Ma as how she read in the newspaper that women would rule the world a thousand years from now.

"Gosh, that's swell," sez Ma. "I know I'd be a good president, and I'd make you Jim Farley, Aunt Lil."

"How about your old man?" sez Aunt Lizzie.

"Awh shucks," Ma sez, "I'd make him fifth assistant janitor in Jim Hambleton's office."

Right then I cleared my throat and walked into the room. Ma whirled on me quick like, and sez, "Git them cans of honey out of the furnace room 'fore I have to tell you again."

Outside the door here, I can hear Ma asking Aunt Liz, "Did you say we had to wait a thousand years? Oh my!"

I must hurry and get that honey out.

———ABJ———

Death of Gaetano Piana

It is with great regret that we announce the death of an old friend, Captain Gaetano Piana of Bologna, Italy. Mr. Piana was one of the most extensive honey producers and queen breeders in Italy and was a personal acquaintance and friend of our senior editor, Mr. C. P. Dadant. Mr. Dadant visited him during the summer of 1913 and a full detail of his visit to Mr. Piana's apiary appears in the March 1915 issue of the American Bee Journal. At the time of Mr. Dadant's visit to Mr. Piana he was a teacher of apiculture at the Royal Agricultural School of Imola. Mr. Piana was also for many years sub-editor of the Apicultore De'Italia writing monthly under the heading of "Practices of Apiculture."

He compiled a general index of the publication of apiculture of Italian, French, English and German authors and he translated the "The Diseases of Bees" by C. P. Dadant.

Mr. Piana besides selling queens in large quantities in Italy and nearby countries, also exported many to the U. S. A.

During the great war he was decorated for his valor and lost his brother who had voluntarily joined and come on purpose from America. He was born on April 24, 1887 and his death occurred on October 19, 1937. News of his death only reached us a short time ago. Mr. Piana leaves his inconsolate wife with four little sons.

———ABJ———

Native Plants of Texas

A bulletin of unusual interest to plant lovers has recently been issued by the Texas Agricultural Experiment Station at College Station. It is entitled "Valuable Plants Native to Texas" and is by H. B. Parks, chief of the division of apiculture.

Parks is a naturalist of unusual attainments and wide observation. He has spent many years in personal observations in the field and in growing the plants at the Apicultural Station near San Antonio, in preparation for this publication.

Something like 3000 plants are described with notes concerning their utilization as ornamentals, honey plants, forage crops or other useful purposes.

It is a book of 173 large pages and contains a wealth of material on southwestern plants not readily available. It is of special interest to Texas residents but useful also to that large group of persons who are interested in ornamental gardening wherever they live.

While the book is not primarily devoted to honey plants there are many notes concerning honey plants included and it should be valuable to Texas beekeepers on that account.

Until now there has been a dearth of information concerning the flora of much of Texas and botanical students who want to know more about the plant life of this region will find it invaluable. This bulletin, together with its companion volume, "Catalog of the Flora of Texas," mentioned elsewhere, will supply a great need. F. C. P.

———ABJ———

Ray D. Holbrook

Our sympathy is extended to Mrs. N. B. Holbrook, of Lincoln, Nebraska, on the loss of her son, Ray D., a beekeeper and a subscriber of American Bee Journal. Here is a picture of Mr. Holbrook, and the following facts concerning him:

Ray D. Holbrook was born in Lincoln, Nebraska, March 19, 1900, and lived all his life in that city. At the age of three he lost his hearing, which was a great handicap to him, but in spite of it, he found life very interesting. Many of the ordinary channels of work were closed to him, but he finally found one that was as much pleasure as work. And that was working with bees. He started by gathering swarms that people wanted removed from their trees or houses. He even got one from a fire hydrant in the central part of the business district in Lincoln. In this way, he was able to start a small apiary.

Drought conditions in Nebraska hampered his progress for the past three years, but he did not get discouraged. Because he loved to work with children, he hired them to sell his honey, so that they might make some profit.

In December, he started taking a series of treatments, which he hoped would restore his hearing, but due to complications which were not foreseen, he was taken ill suddenly, and on January 8, after a week of illness, he passed away. He leaves to mourn his departure, his mother, father, five brothers and three sisters, and a host of friends.

American Honey Institute

National Auxiliary Officers.

We congratulate the new officers: President, Mrs. Irene Duax, Chicago; and Secretary-Treasurer, Mrs. W. E. Becker, Detroit. We also wish to give thanks to Mrs. Ethel Krebs for her pioneer work in this organization, and to Mrs. Bennett, the former secretary-treasurer. These two, together, with the state leaders, built up the membership to a large number during the first year.

American Honey Institute stands by to assist beekeepers to establish womens' auxiliaries for state and local associations. Remember, the women hold an unlimited amount of influence and if you will give them the chance and the encouragement, they will be of great help.

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"Fun and Money in Bees"

POPULAR MECHANICS magazine for March prints a most interesting interview with "Chief" Hambleton of the U. S. Bee Culture Laboratory. It is well written, easy to understand, and very informative. One thing that is emphasized is the importance of the honeybee to the production of abundant crops of seeds, fruits, and vegetables. This reminds us of inquiries received at the Institute office from orchardists who are realizing the importance of maintaining an apiary in connection with their orchards. May we suggest that you try to bring "Fun and Money in Bees" to the attention of your local teacher of agriculture or your Boys and Girls Club leader. They will be glad to know about it. By the way, we learned from a government release on 4H Club activity and enrollment that in addition to the 1,425 boys enrolled in beekeeping projects, there are also 162 girls.

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Radio Broadcasts.

Speaking of requests received at the Institute, it is apparent that many radio broadcasts have been given this winter. It has been a frequent occurrence to have many requests indicating that a program has referred them to American Honey Institute for recipes. This in turn reminds us of a remark sometimes made to us that tested honey recipes are not an important part of our consumer education program. We believe the requests just mentioned indicate a need for recipe service. As a result of Institute contact with the Foods Editor of the SUNSET magazine, published in California, honey has been mentioned often, but the record breaking article was a half-colum devoted to "How Many Honeys Do You Know?" Evidently the brief but worth while information given was not enough to satify the readers, yet just enough to make them want to know more, because American Honey Institute received over 800 requests for recipes as a result of this half-column.

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Doctors.

Our inquiries also indicate that physicians are more frequently recommending diets to include nothing but honey as the source of sweetening. The requests read almost identically—"I am told by my doctor, or beekeeper friend, or by our Home Economics teacher, or Betty Crocker, or Pillsbury's, or most any of the companies giving free recipe service) that I can get the necessary information and recipes from you." Informing these persons about the advantages of honey and then making its use easy is one of the sure ways to increase the consumption of honey and that is the purpose for which the Institute was founded. The consumer education program is one of the ways the Institute is interpreting the faith and confidence the founders and beekeepers have put in the institute.

— o —

Feature Writers.

There seems to be increasing interest in the bee and honey story on the part of feature writers, and the requests from advertising companies for information are not at all infrequent. The Institute remains the salvation of people of other countries for information. Home Economics classes are more frequently including honey in their courses, especially the experimental cookery and food demonstration classes. During the month of January, several requests were received from college girls all the way from our western coast to eastern Canada. And unless we miss our guess, some of them are going to bring out some useful information.

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New Publications.

Last month your bee journals carried an announcement of the publishing of the annual report and three leaflets. By this time all Institute members should have received a copy of the annual report. It would make us happy if you would take a few minutes to look it over and read the information it brings. Rush business at the printer's has prevented the release of the leaflets as early as we anticipated, but they are ready now and we hope, if you haven't already seen them, that you will write for sample copies. We think they are "dandies." The leaflet containing the selection of prize winning recipes, we feel sure, is going to be one of the most popular leaflets ever published by the Institute. It is an attractive leaflet, printed with blue ink on a white background—symbolic, we think, of prize winners.

The "Using Honey" leaflet so long out of print, but with which you all are familiar, is making its debut this spring. It is revised and is published under the new title of HONEY FACTS. But the best part of all is that it has a new dress and fresh make-up but sells for the same low price.

Remember the little blue folder, "New Uses For Our Oldest Sweet"? We know you haven't forgotten because it has been so popular and you have purchased so many of them—in fact we are just exhausting the last of a total of over 200,000 that have been printed since the first writing. Since the other leaflets are "dolled up" in new "togs," we had to treat this one the same, so a new dress it has, but we're not going to give you the details on this. It's a surprise.

We dare to hope that you are going to receive these three leaflets with a great deal of enthusiasm. Don't forget, we want you to have sample copies. Write AMERICAN HONEY INSTITUTE, Madison, Wisconsin today.

———ABJ———

February Scrambled Issue

Quite a number of complaints have come about the February number, having two of the inside forms repeated so that the first eight pages of the Journal were missing. If any reader having received copies of the American Bee Journal, February issue, like this, will write or drop a card, we will see that they get one which is assembled correctly. This occurred in the assembly department at the printer and since about a dozen readers have already asked for correct copies, we don't want anybody else to miss the first of the magazine. We will be glad to replace any which are wrong. It will also help us check up on the number of copies which were incorrectly put together. Just drop us a card and we will send you a good February issue.

Research in Malnutrition

By Mrs. J. Lake Macdonald,

Indiana.

I AM very glad to give you a report of some of my findings in research work in diet for malnutrition in children over a period of time.

First, may I give you some of the things which caused my interest in honey. In 1914 I was working in a Food and Drug Laboratory as chemist and I was allowed special privilege to examine products of my own choice as time permitted. I was making a series of urine analysis for two out-of-town doctors, checking results of their treatments from reports found on my microscope and in my test tube. My interest became intense on my findings and I began a further study of sugar, etc.

I was convinced as time went on, and these tests took more and more of my time, something was wrong with our diets. With a long line of pharmacists and a doctor in the family, I continued to study sweets.

Behind a drug store soda fountain, I studied the habits and likes of customers, fat ones and thin ones.

Later, I found our young son thrived, was never ill when candy was out of his diet. No candy until over three years old.

From 1926 to 1930 we were in a large city where living conditions were not like the wide open spaces of the country. Our son developed a long series of colds which finally ended in pneumonia which left him skin and bones. I felt I was to blame for this. If I fed him right he would not have had a cold in the first place.

We came back to Indiana to a farm and a sudden attack of rheumatism brought a request from the doctor for honey (no sugar). The boy liked honey and we all began to like it. It went so fast we had to buy two colonies of bees to supply our table. By then I began a milk and honey feeding of this boy and in seven years now he has never missed a day of school and only had two or three colds. He has worked every day in the hot sun and has traveled 2,500 miles on a bicycle in the last sixteen months. Milk and honey daily. It gave him the energy and the necessary minerals he needed for growth

Now a visit to the state convention with my husband gave me a very pleasant surprise. There were many men in the assembly while well up in years had such a healthy appearance, fine color and were very alert. Was it honey or bee stings? Further study of the contents of honey convinced me it was honey.

Case No. 2. A little girl became ill and was taken to the doctor. She had a developed case of rickets and treatment was ordered. Out on her grandfather's farm she had all the milk and honey she could use. I saw her in the winter and she surely is a picture of health and not a trace of the rickets.

I have a hobby raising a very large breed of dogs and on the proper feeding thereby have developed a magnificent specimen of puppy which has been fed small quantities of honey in the table scraps for the past two months. Along with it is one from town, same age, etc., that has a bad case of rickets because of improper feeding, twenty pounds light. After ten days the swelling has gone out of the one leg and he is walking on it, and the other three feet are getting larger and feel like the legs of a dog. Sugar, of course, isn't on the menu for dogs, but honey helps with bone building minerals.

Case No. 3. In our community from February 1 each year until April 1, undernourished children in the schools are given one-half pint of milk at the morning recess period. One of our primary teachers and a welfare worker interested in doing what she could to help the children, selected one little six year old girl who had been very ill, a depression child, for a special two weeks' test of skim milk and honey. She gave her one-half pint of milk and tablespoon of honey twice daily from Monday to Friday. Friday evening she checked her weight. She had gained one pound. On Saturday and Sunday there was no school so she did not receive her milk and honey. On Monday morning, the weight was again taken and she still had the gained pound. The second week the test was continued and again on Friday she had gained another pound. Only two periods of five days each with two day intervals of no school with no milk and honey and a pound each week, or two pounds' gain. This child had been very ill, a depression child. Her parents were so well pleased they asked for the rest of the honey jar to continue the feeding at home.

Case No. 4. A young boy from Florida who has a carbohydrate poisoning. His doctor ordered honey to clear up this skin condition. He used fifteen pounds of honey in three weeks to accomplish this, but it did the work. Too much sugar had caused an eruption on the skin which cleared with proper diet.

These examples of specific tests convince me honey is necessary for a proper diet and a proper diet is essential for health. That the mind and hand that plan the family meals is entirely or at least ninety per cent responsible for the kind of health the family gets and no one else.

It isn't always possible or easy to get people to work with you on these things especially when you have honey to sell. But if we record these findings, they are sure to convince others. Each year I find more people asking about right foods and combinations and they are heeding advice.

In the adult classes I am finding some splendid cases. Sometimes it takes a lot of talking and patience to get them started.

I am hoping for a chance soon to get an arthritis sufferer to try the honey health diet but I have been working on this for three years. My experience in the food and drug laboratory, drug store and chemistry laboratory makes the study of honey an intensely interesting one.

There is an immense field open to us as producers to give people a truly healthful food and to relieve humanity of much suffering caused by improper eating and combination of foods and we can only do this by combining the findings of doctors, chemists, and dieticians with research and experiments.

ABJ

Rain for California

We are needing rain badly in southern California although I believe they have had plenty in the northern part of the state. So far we have a deficiency of about 3½ inches from normal. It must rain soon and liberally to make a crop. From present indications, what crops we do have may come quite early due to an open winter.

C. B. Justice, California.

ABJ

Nevada Tax

The tax on bees in the state of Nevada has been set at 12 cents per colony.

California Cultivator,
January 1.

Honey Poppy Seed Cake

A Tried and Tested Recipe

MRS. BODENSCHATZ

Facts About Making Cakes with Honey.

1. Successful cakes depend upon tested recipes, level accurate measurements and standard measuring spoons, correct baking temperatures, and a well used oven. Be familiar with the effect of different brands of products as they make it necessary for you to change the proportion in the recipe.

2. For every cup of sugar called for in your favorite recipe try taking out 1-3 c. and replacing it with 1-3 c. light honey. (Light honey means light in color and mild in flavor.)

3. As much as half honey or even all honey may be used in **some** recipes, but have found 1-3 more successful.

4. Do not take out liquid. This causes crumbling.

5. Always be sure to **cream** your shortening, add honey, **cream** again, add sugar and **cream** again. If you do not cream the shortening, honey and sugar well, your cakes will have a shaded appearance.

6. Be sure your shortening is soft, especially if you do not use an electric mixer.

7. Add sifted dry ingredients alternately with milk, starting with dry ingredients and ending with same.

8. Honey cakes require more salt than ordinary sugar ones.

9. Bake in a 350° F. oven the same as you would an all sugar cake.

10. Honey cakes may be kept for some time and still be moist.

Mrs. Adam Bodenschatz.

Honey Poppy Seed Cake.

Pour ¾ c. milk over ½ c. poppy seed and let stand 3 hours.

½ c. butter
½ c. light honey
1 c. sugar
4 egg whites (beaten stiff)
2 c. all purpose flour
1½ teaspoon baking powder
⅛ teaspoon salt

1. Sift flour once before measuring.
2. Add the baking powder and salt and sift four times.
3. Cream butter.
4. Add honey and cream again.
5. Add sugar and cream again.
6. Add milk and poppy seed and mix well.
7. Add the sifted dry ingredients.
8. Fold in the beaten egg whites.
9. Bake in two layers in a 350° F. oven until done (about 30 to 35 minutes according to depth of pan.)
10. Put filling between layers and whipped cream on top and sides of cake.

Filling for Between Layers.

1½ c. milk
1 teaspoon corn starch
¼ c. light honey
4 egg yolks
Pinch salt

Cook in double boiler stirring constantly until thick enough to spread, then add ½ c. chopped nut meats and spread between layers.

These recipes have been tried and tested by Mrs. Bodenschatz, a national and state honey cookery prize winner. Other recipes of Mrs. Bodenschatz have appeared previously in American Bee Journal. If you try this recipe, we would like to know if you have the least difficulty with it, and we would like to know how you like it.

If you have an original honey recipe, send it to us, and we will test it. For each successful recipe, the originator will be paid $1.00 and will be presented with one copy of the beautiful book on tested honey recipes put out by American Honey Institute "100 Honey Helpings."

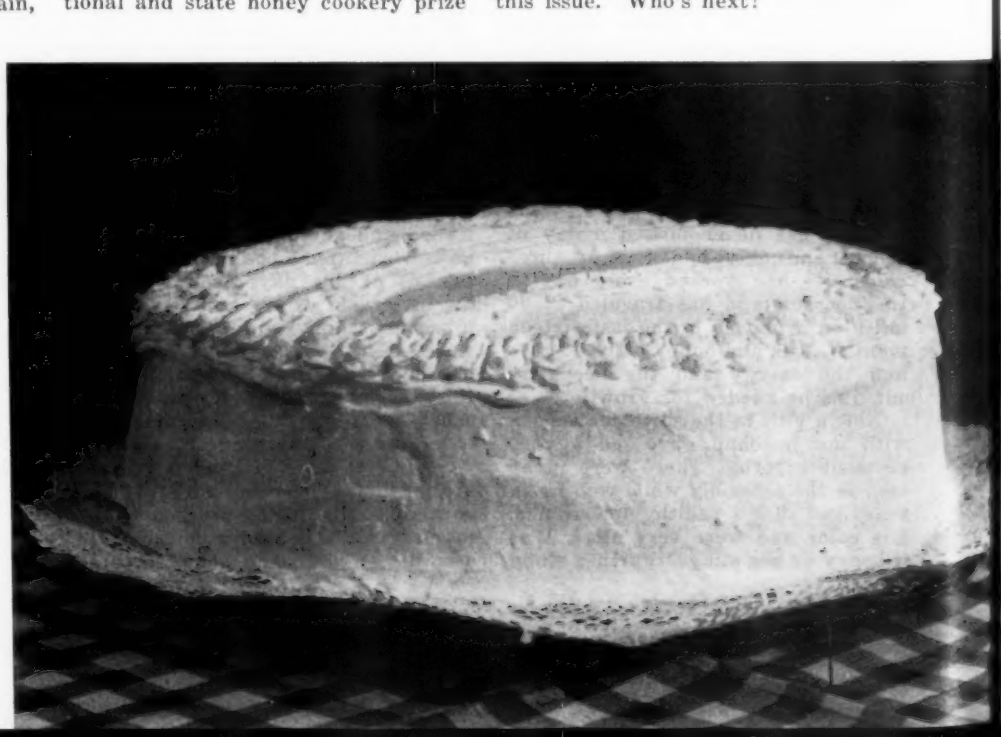
The recipe tested will be published in a full page of the American Bee Journal with a picture of the product. We shall also want for each recipe a picture of the originator to be published at the same time. We do not want recipes taken from some other source, since we are only interested in original recipes.

———*ABJ*———

The Cover Picture

From Paul Chadee, of Illinois. He swings a professional camera. We have all the covers for 1938 filled now. But what of 1939? Twelve times you can try and if you get your picture placed, it's five dollars.

Inside, it's still a dollar a pix, and enough information to go with it. Space is too much in demand this time to cite the reader pictures in this issue. Who's next?



The Search for Disease Resistant Bees

By H. C. Dadant,

Illinois.

(A paper presented before the International Convention in Washington in October.)

IN discussing this subject it is well to bear in mind that there is no established or dependable strain of bees resistant to American foulbrood in existence today. We are primarily concerned with a search for suitable stock and methods of propagation whereby a good degree of resistance may eventually be maintained.

The dangers of experimenting are great. John M. Bixler, in 1925, reported that only one colony survived among 300. An Indiana beekeeper in 1935, finding 11 colonies mildly affected with American foulbrood in the fall, wintered them, and all died of the disease in the spring. It is well therefore that research on this problem be strictly confined to the very few who are trained for and have lawful permission to engage in such work.

So far as the writer knows, resistance to disease, peculiar to certain individual strains in plant and animal life has never reached 100 per cent of immunity. The producer continues to be ever keenly watchful of his crop or stock, eliminating or treating promptly all diseased individuals by the best known practices. In fact it is well to be always in dread of the dire consequences resulting from the spread of disease.

A strain of bees satisfactorily resistant to A. F. B., if ever established, will be of value provided its limitations are well understood and due care exercised. No doubt official and personal inspection will continue to be needed but it is hoped at reduced cost. It will likely prove to be an aid to inspection but will not supplant it.

Too great a confidence by the beekeeper in a strain of bees resistant to A. F. B. so called, could easily end in greater disaster than proper careful practice does today with our highly susceptible strains.

American foulbrood has been known to exist for about four centuries, perhaps longer, but was not generally spread in the United States until comparatively recent years. European foulbrood was most widely spread first and probably feared more than American foulbrood at one time. As E. F. B. came under positive control, beekeepers seemed to lose fear of brood diseases and for a time the two scourges were confused. A. F. B. spread rather rapidly 20 to 30 years ago until almost every colony of the country has at some time been menaced.

McEvoy of Canada, finally found a satisfactory way of keeping the disease in check, the shaking method. But since it is impossible to control the drifting of bees among adjacent colonies, prevent robbing and keep infected comb or honey from the bees at all times, the drastic method of burning has become the final and only good solution in general use.

We have reached a state of high efficiency in the inspection service. The work is very valuable and commendable. European foulbrood has been practically wiped out and gives no concern. However, the fact that a good strain of Italians is resistant to E. F. B., justifies us in hoping that a strain may be found resistant to A. F. B. We must bear in mind that a resistant strain does not mean immunity, but to be of much value, progeny should test more than 50% resistant.

What is resistance? The earlier observations seemed to indicate it to be a strong house cleaning character, simply an unusual mechanical activity on the part of the workers. Practically all good active Italian colonies, for instance, clean out and eradicate European foulbrood which indicates that bees are active house cleaners. We also know that they will not allow a dead or dying adult bee to remain in the hive. But A. F. B. is a different story.

Most of you have probably at some time found colonies with only a few cells of disease present. On the following inspection the dead cells had disappeared, leaving doubt as to whether diagnosis for A. F. B. was correct or resistance was present in the first instance. We do not consider it good beekeeping practice to wait and see whether the colony will clean up. Once a colony shows infection even by only one cell it is best to assume that it is doomed. A slight infection shortly before a honeyflow or at other times may disappear only to reappear later.

Dr. G. F. White has proved that one cell of A. F. B. is sufficient to infect a colony. Dr. A. P. Sturtevant has found that a scale containing about 50 million spores, thoroughly dried, ground fine and dissolved in a litre (about 1 quart) of syrup is the apparent minimum infectious dose for a colony. In fact, he found it impossible to cause the disease in some colonies with this dosage. It is, therefore, possible for some colonies to overcome limited exposure or clean it out sufficiently well to continue clean for a time at least. This indicates there is a variation in resistance. This fact makes the search for resistant strain of bees hopeful.

Is there a possibility that the food in a locality may have some influence on the virulence of A. F. B.? The disease enters the bee by mouth with food and develops along the alimentary canal. It has been found by Dr. Sturtevant that the sugar content of the food is reduced about the fifth and sixth days of larval development. Sealing of the brood cells then follows and as the reducing sugar content is entirely consumed by the seventh and eighth days the disease germs then increase and the larvae are found dying rapidly. In fact a certain percentage of reducing sugar is believed to inhibit the germination of spores and growth of Bacillus larvae. It hardly seems plausible that the pollen supply would have any bearing on the case. But reports lead us to wonder why some localities seem to report more evidence of resistance than others. Are such cases a coincidence or the result of unusual local interest? One of the great new discoveries in science in 1936, revealing that certain types of apparently inert protein actually grow similar to bacteria and multiply by dividing, seems to indicate that a new explanation has been found for the unfiltrable virus. The discovery may aid in better solution of brood diseases.

During a two-year period, Mr. Cale and I made some observations on bee behavior in the presence of A. F. B. A few affected colonies were placed in an isolated location with the permission of the inspector and the following observations were made:

Several frames were selected for the experiment. By marks on top and end bars and by counting the rows of cells, or cells in the rows, many diseased larvae were identified. These were inspected twice a week and we learned how cells are sometimes cleaned out. In some cases where larvae had recently died, the early yellow stages were cleaned out or partly so. In later stages the loose or more free part of the larvae were torn away. In their vigorous work removing ropy material and older dead dried scales sticking fast, the side walls of many cells were torn out by the workers. Large holes were found in the side walls, especially in the lower walls where dead larvae rest. In fact, some side walls were removed entirely to the midrib and later rebuilt. Some badly infected parts of the combs were even torn out entirely, midrib and all. Before the end of the season, however, the colonies became hopelessly diseased and were burned.

The first impression is that resistance seems to be a house cleaning character, a mechanical removal of the dead larvae, although some other factors are probably involved, in the most resistant cases.

In one case about ten years ago a beekeeper in our county lost by disease all his colonies but one. He turned the colony over to us. Since no microscopical examination had been made to be sure A. F. B. had been present in his yard, we made a test case of it and placed a whole frame of badly diseased brood in the middle of the brood nest. About two weeks later we returned feeling sure the colony would be infected in spite of some honeyflow, but on removing the frame were dumbfounded to find that not a cell of A. F. B. could be found anywhere. In fact, the frame was almost entirely nicely sealed brood with a few cells of young larvae. There was no mistake made in this case. The diseased frame was mutilated with a knife to identify it and the disease was A. F. B. Still doubtful of what was before our eyes, we uncapped many sealed cells only to find all healthy. This colony remained so all that season. The queen being an old one, was superseded the following spring. Remember, this was the sole surviving colony of an entire large apiary.

(Again a warning is opportune. Experimenting in this way is dangerous to all surrounding bees and must not be undertaken unless isolated for several miles from all other bees and by special permission. The chance of spreading disease is fully 99 per cent or more.)

At the Iowa Agricultural Experiment Station, Dr. W. V. Lambert has finally, after a number of years' work in breeding and selecting chickens resistant to poultry typhoid, established a strain of value. The mortality has been decreased from 85% to 10%. A similar result may or may not be obtained with bees showing resistance to A. F. B. Experiments with disease among plants has resulted in fixing a resistant strain in 15 to 20 generations in some cases.

A plant disease "western yellow blight" or curlytop in the West, formerly caused heavy damage to the sugar beet crop. A resistant strain was finally propagated after 25 years' work. The resistant strain first contained a comparatively small percentage of sugar but by continued experimentation and selection, a good sugar bearing beet of the desired disease-free variety was established. There are a number of similar cases.

Beginning in the spring of 1935 a cooperative research project was started between the Iowa State College Experiment Station, with Dr. O. W. Park in charge, and the American Bee Journal, represented by its field editor, Frank C. Pellett. The isolated location for this experiment was near Atlantic, Iowa, and continues today as an Iowa cooperative yard.

A number of observing beekeepers from California to Vermont cooperated by donating 45 colonies in all which were believed to be more or less resistant.

Twenty-five of them built up to 8-frame brood strength and were used together with six check colonies. These six were built up from packages of bees taken at random and not from resistant stock. Pieces of comb 2"x2½" containing at least 75 cells of A. F. B. were used for inoculation by insertion in one frame of each hive.

Since a full report of this research was previously made by Dr. O. W. Park in the January issues of 1936 and 1937, only brief conclusions will be mentioned here. While all of the six check colonies succumbed to the disease about 20% of the selected group of 25 survived, showed marked resistance and were deemed suitable as foundation stock. About 80 queens were reared from them in 1936, resulting, after exposure to disease as before, in a survival of about 33-1/3%.

Today we have a valuable cooperative force attacking the problem. Due to the generous cooperation, including considerable funds, provided by Jas. I. Hambleton and his staff of the Department of Agriculture, several hundred queens were reared from the 1936 stock in isolated Texas locations in 1937 under the supervision of State Entomologist H. B. Parks and parentage of each queen recorded. No details of the year's results are yet published but it has been stated that the percentage of resistant ones has increased satisfactorily over the previous year. The experiments are becoming increasingly burdensome and interesting due to the many crosses at hand involving further attempts in breeding to run down the most dependable stock. This will entail not only a search for still greater resistance to disease but also selection for other desired qualifications of ideal stock such as prolificness, honey gathering, gentleness, minimum robbing and burr comb building, satisfactory wintering, minimum swarming, spring upbuilding, preparation for winter, etc.

Prof. H. F. Wilson enlisted the interest of a prominent geneticist, Dr. Cole of Wisconsin, who stated that in fixing a resistant strain, control of drone flight may be necessary as the resistant character may be carried by the male parentage. This idea remains to be proved.

The experiments by G. H. Cale in our cooperative yards have been carried on at a sacrifice. Much of the stock of the hundreds of queens reared in 1937 consists of hybrids. An increased percentage of colonies break down when a constant supply of infected combs are given them. A queen from resistant stock introduced into a colony of light but decided infection does not become, as a rule, established rapidly enough to survive.

It is interesting to consider that other factors besides house cleaning may cause variation in resistance. A minimum robbing instinct which Caucasians usually possess has credited them with a degree of resistance, yet they too are destroyed by the disease when sufficiently infected. A minimum robbing instinct is of value but it does not explain the resistance that has been experienced in colonies which cleaned it out and survived a heavy infection.

Since it has been observed that all colonies infected with A. F. B. do clean out some of it, and that some clean it out faster than it develops, we may suspect that there may be physiological factors present particularly in the most resistant ones. In the case of the colony mentioned which cleaned out a whole frame of A. F. B. without becoming infected, house cleaning activity alone does not seem satisfactorily to explain it.

In the Iowa test yard at Atlantic, Mr. Pellett reports the following: A swarm issued from a colony which possessed a resistant record of three years. The clipped queen was lost trying to follow the swarm. The swarm joined another small swarm and all was returned to the original

hive. They remained and were later found to possess a new queen. The record of this case is not complete but later that season the colony became diseased. It is probable that the combs of a resistant colony are a source of dangerous infection even though they give no trouble as long as the resistant stock occupies them. Physiological factors, not house cleaning seem to be the dominant factors of resistance.

We may well investigate to determine where the factors of resistance lie. Does the queen transmit resistance through the egg to the larvae or does the fertilization of the egg carry part or all of the factors? Do the worker bees, who prepare the larval food, play an important role here? Can workers from a resistant queen when given eggs from a non-resistant queen, produce resistant and healthy larvae? Will eggs laid by a queen known to be resistant, develop into healthy stock even though reared by workers from non-resistant stock regardless of whether or not they are exposed to infected combs or food? And again does a strongly resistant colony and its queen remain so regardless of occasional or continuous exposures during successive years of its existence?

The beekeepers will be much interested in the solution of these questions to determine safe practices in the apiary should a resistant strain be later available to them.

A theory of an apparent physiological resistant character is called bacteriophage and may be present in the bee. Bacteriophage is a name given to an organism which is believed to develop in large numbers following or accompanying a bacterial infection and destroys the latter. Its presence is dependent on the presence of the original disease on which it lives. In fact bacteriophage feeds on bacteria. The resistant factor may be induced or built up by the constant presence of the disease, probably with minimum dosages at the start. That is, resistance or immunity may be induced or built up by repeated light infections.

Facts of importance have already been discovered by bacteriologists working on the problem of how disease may be introduced and spread among the larvae. It is well known that larvae become infected when nurse bees have access to sufficiently infected honey, syrup, or larvae dead of the disease, except in the rare cases showing marked resistance. A. P. Sturtevant found that when feeding larvae directly in their cells with spores of the organism no disease occurred except in rare cases with extreme dosages. H. L. Tarr, of England, experienced similar results. He also found that larvae fed large doses of vegetative cells prepared in the laboratory or taken from recently infected larvae containing mostly such cells remained healthy.

The adult or nurse bees may possess some factors to account for the variation found in resistance.

Geneticists tell us that variations or mutations commonly known as sports appear in plant and animal life. Such new characters arise for the most part suddenly, breed true to their new type, in the same way as the characters do in the original type from which they arose. We may, therefore, hope that a colony of bees showing marked resistance may be a type whose offsprings will be the same.

Gregor Mendel, discoverer of the Mendelian laws, found by crossing a tall growing pea with a short growing one that all the hybrids were tall, indicating what is named a dominant character in the tall pea. But when this hybrid was allowed to self fertilize or fertilize with others of the same hybrid, there were produced three tall growing to one short. The tall growing hybrid carried the short character through the second generation to the third but in reduced proportion of one short to three tall; that is, tall is dominant to short three to one in this case. The tall edible pea is so pure a strain that when crossed with another pure tall one, all future generations were tall.

It is quite possible that it will be necessary to determine the genetics of the honeybee before the highest resistance can be established and controlled. There may be available in the meantime a strain possessing considerable resistance or at least a much better strain than the average in our apiaries. But there is much doubt as to whether it would be wise to furnish a partially resistant strain as such. Many could easily interpret it with over-confidence.

There may exist what is known in genetics as linked characters in the bee such as have been discovered by geneticists in the vinegar fly **(Drosophila melanogaster)**. Resistance is possibly linked with body color or markings, eye color, hairs, wing shapes and so on, and might thus be identified, once determined.

The first question which probably comes to the mind of the honey producer is, when will a disease resistant strain of bees be established so that a supply of queens will be ready for our apiaries? That cannot be answered; perhaps never, but, we may expect that within 10 to 50 years, perhaps less, we will know whether resistance is dependable and inheritable.

In conclusion, we may not need to know in the early days of this problem why resistance occurs. And again the factors present in resistance may have to be determined before being controlled. It is impossible to foresee or predict all the difficulties of this work.

Altogether the problem must be approached with an open mind. Sufficient funds to carry the work to conclusion, whether it be a success or failure, should be provided. Capable men, keenly interested and constantly in charge, may carry it to conclusion for the benefit of the beekeeping public.

In the meantime, honey producers must continue to control losses by the present most stringent methods and give the inspectors the fullest cooperation. In fact the recent steps taken by the state of Wisconsin to increase its appropriation to $31,000 per year in support of the inspection service is very commendable. Honey producers are thereby enabled to produce a paying crop of fine honey in their apiaries and the industry continue to prosper.

ABJ

Ask Them to Buy

Last week I sold the last of our honey. We had about 2,000 pounds good, Minnesota, mixed honey. It was put up in 5 pound and 10 pound tins. More than 1,000 pounds I sold in granulated form right in the pail. Objections to granulation, some, but what of it? Our price 55 cents and $1.00. We started out with 60 cents and $1.10, but we had to come down to the lower price. Yet I feel sure that if we would have held our price, honey would have sold just as well. A few hundred pounds were shipped to a retailer in Chicago. The rest was sold through my filling station right here in town. We have about 950 people in the village plus the farmers' trade from 7 miles around. A local ad in the paper for about a month did some good, but our main contact was by the gas pumps. We have very little tourist trade, yet strangers bought some. In fact we tried to sell honey to all people, regardless if we knew them or not.

This is the way we did it. Car drives up. Perhaps wants gas, or oil or air, or maybe some information. We tried to serve them. But before those folks left, we spoke and said—"Like to buy some honey?" And we sold honey. About 2,000 pounds or better since September 1st. That makes around 300 pounds a month or better than a pail a day. Ten years ago the auto parts and accessory people hired a sales specialist. I do not recollect his name. Mr. Ray or some similar name. But this man pushed a slogan. It was "Let's ask them to buy." What was wrong with it? Nothing. Could not all of us use that slogan? Sure. What you say? Let us all try it. I am for it.

A. J. Van Rossum,
Minnesota.

Elderly Javanese with batik parasol; gay, no doubt; with a smile and a cane.

Voyage to Java

By J. T. MacMillan,

New York.

Where people wear beeswax paintings for clothing.

HALFWAY round the world lies a group of luxuriantly foliaged islands, the Malay Archipelago. After his journey to China, Marco Polo first reported these tropical islands because of their wealth of aromatic spices and colorful fabrics. They are the historic East Indies, vainly sought for by Columbus in 1492.

There we find the south sea island paradise, Bali, whose people and panoramas are to be seen in many of our steamship and travel advertisements. And Borneo, land of the head-hunting Dyaks, man-eating sharks and crocodiles, the orang-outang ape and more than forty odd species of stingless bees and honey-bees.

Throughout the Archipelago, in fact, range Apis Dorsata, the vicious, giant bee; Apis Florea, the dwarf bee; and Apis Indica. Wherever trees grow, there are found uncounted species of the stingless bee, Trigona.

Many of the tribes make a lucrative business of gathering honey and beeswax in the jungle, most of which they sell. A group of about a hundred natives—in union there is strength, even against the bees—go out on one of these "hunts," surrounding a tree in which bees have been located. With the aid of much smoke and fire, the nests are torn from the branches and thrown down to a large sheet on the ground. After this the comb is hung up to drain, and the wax com-

Beeswax helped to make this colorful garb. Although honey production is of small importance, beeswax is prime in Java.

Two belles of Java, with delicate and beautiful garments, a fine showing of the art known as batik.

pressed. Twenty-five pounds of honey is a good yield per nest.

The natives are most careful when they have discovered a colony group of the giant bee. This species has an uncomfortable habit of pursuing disturbers tenaciously for long distances. Diving into streams does not throw them off the track as they will hover above the water, stinging each time a part of the body comes up. And the stinging they inflict, by comparison, would make black and hybrid bees like mosquitoes!

Not far out of the mighty fortress and commercial port, Singapore, we pass by Borneo and Sumatra, coming upon the most fertile land of the East.

This island of Java is no larger than Louisiana, yet its population is four times that of all Canada. Thus we have the most densely populated land in the world, 821 people in each square mile, and no want of food, so fertile is the volcanic soil.

Rice, the main food, is produced in abundance. Coffee, tea and cocaine are exported. Java is numbered among the largest sugar exporting countries. 99 per cent of the world's quinine supply originates here in the cinchona plantations. Rubber, tin and petroleum exports are large.

Stepping ashore at any port, we find people of many races, but predominantly Javans, Chinese, Hindus, Japanese and a scattering of Europeans. The Orientals wear strange clothes of more dazzling hues than the Painted Desert, or a southern flower garden in full bloom. But nowhere do we see color and beauty more rampant than in the port of Surabaya, Java.

Here the monsoons bring 130 inches of rain annually, and a sun-drenched thermometer that never varies more than 10 degrees from the annual mean of 77. In this damp, yet sun-lit atmosphere grow tall palms, fig trees, poincianas, hibiscus, and orchids galore. The city itself lies along the banks of Kali Mas, the River of Gold. Overhead, a deep blue tropical sky, and no matter what day of the year, towering, snow white cumulus clouds.

Against this rainbow-hued prop, move the natives in their wax paintings, batik sarongs, flowered and designed in carmine, purple, orange, cerise, flame red, green and gold. Half-tones cover the entire range of known colors. No two sarongs or slendangs are alike, either in design or colors. With all the lushness of a tropical setting, the native's clothes stand out as the first thing a traveler notices on stepping ashore.

Javan clothing is simple, in the main consisting of only four pieces. Collectively, it is called batik, which literally means beeswax painting.

There is the sarong, a word frequently used by writers of south

sea stories. This is a skirt 10 or 12 feet long and about 40 inches in width. Twisted about the body from the waist down, it is worn by both sexes.

The slendang is about 9 feet long and 18 inches wide. The men use it as a sash or for headgear, and the women for carrying babies and burdens on their backs. The kemban is a girdle worn by the women across the breasts, or about the waist on special occasions. The sarong kapala is used, by the method of designing and winding, for indicating the locality from which the wearer comes.

The native method of producing batik requires a fine sense of artistry, that, like their profound courtesy, seems to be an inbred quality. That the art is ancient, no one doubts, for stone sculptures 1200 years old, show Buddha wearing batik clothing. It probably came to Java from India, with first invasion of the Hindus. Similar work has long been known to exist in India.

Though silk is used for ceremonial affairs, cotton is far more common The material is washed thoroughly and then steeped in coconut oil or castor oil. Dried in the sun and lightly pounded with a mallet, it soon becomes soft and creamy. Stretched on a rack, it is ready for the flower, native history or geometrical designs, for centuries handed down from mother to daughter.

The artist, usually a woman, then draws in the design with a tjanting, or copper pot on a bamboo stick. One side of the pot curves down to a delicate spout out of which flows the molten beeswax used in all batik making. A crude cotton brush, the djegoel, is commonly used for sketching large areas. When this stage of the work is completed, a sarong is a maze of intricate beeswax tracings.

If the material is to be colored blue all parts not blue, are covered with beeswax. The sarong is then waxed on the reverse side and dipped into cold water to stiffen the beeswax. Placed in a vat of color, the untouched portions absorb the dye. Following this the wax is removed in a bath of gasoline. All the dying is done by the men. The process is duplicated as many times as there are colors in the sarong. First, the freehand beeswax painting, then the dye bath. After much labor the finished batik sarong is dipped into a solution of sugar-whiting and alum to give it a high finish. Because of its superior ductility, and ability to turn away the many dyes without failure, beeswax is used throughout.

In another process called tjap, paraffin is mixed with equal parts of beeswax. The result is a crackle finish composed of fine, hair-line streaks running all through the design. The paraffin wax cracks, under the strain of handling, permitting the various colors to get through the material. The effect is pleasing, but is undesirable in the better made batik. This is the commercial process.

Tjap made batik has been in use since the 15th Century. Since Japan began actively supplying Javanese markets, to the deep concern of the Dutch, tjap has come into more extensive use. By this process, labor costs, though low in any event in the East, are cut many times. The Javanese do not care for it especially, but the price is much lower.

A tjap is a wooden block into which copper strips are set, on end or in flat layers, in a fashion similar to that of the cloissons which divide the various enamel colors in the beautiful Chinese Cloissonne ware. These strips are bent and cut with tiny pliers to the shape of the design. Duplicates are made, one for each side of the material.

When completed, they are dipped into molten wax and applied to a sarong. From that point on the methods are similar to the usual batik work. Years of training are required for learning tjap block making and designing. The resulting batiks, nevertheless, are in no way equal to those produced by the native's freehand sketching in beeswax.

These fabrics are one of the reasons for Columbus' voyage, and for the centuries old search for the Northwest Passage. Now, batik has its rightful place in our art museums and even in our everyday clothing. Not only Javans wear this colorful clothing; nor is batik confined to the 60 million inhabitants of the Malay Archipelago.

Under its English name of prints, such as calico and gingham, this type of clothing is found on the other half of the world also. Our tastes and methods of manufacture differ; but so do we.

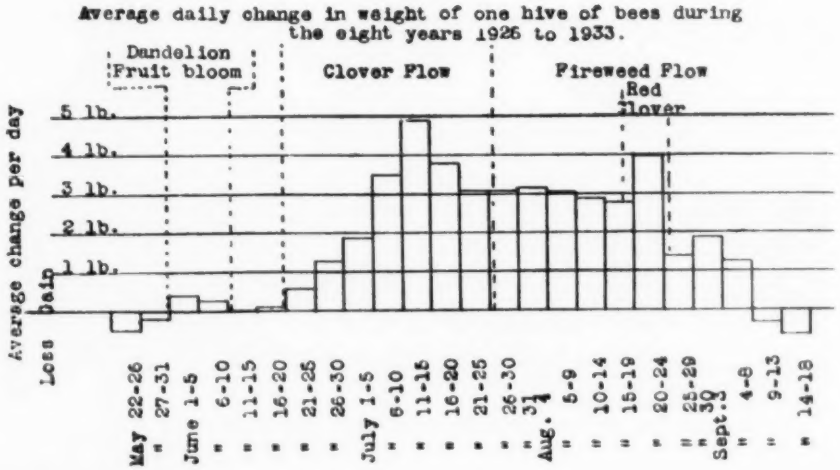
—ABJ—

Observations On Bees On Red Clover in Canada

THE chart given here was sent by Smith Ballantyne, Superintendent of the Experiment Station in northern Ontario, at Kapuskasing, Ontario. Commenting on it, Mr. Ballantyne says, "In a recent Journal you suggest the desirability of observations about honeybees working on red clover and also the desirability of saving seed from plants on which the bees were seen to work.

"In this northern and short-seasoned district, Italian bees work freely on the second crop of red clover during some years. The enclosed chart would indicate that a surplus of honey is stored from that source. This, I think, may be due to one or both of two factors, (a) the corolla tubes being so full of nectar that the honeybee can reach at least some of it; (b) the season or weather makes the tubes shorter than normally. In addition to those two factors, there probably are, as you suggest, individual plants with short flowers from which a new strain could be developed."

Dominion Apiarist, C. B. Gooderham, commenting on this material



from Superintendent Ballantyne, says, "I would also like to add a note which bears out Mr. Ballantyne's observations under (a): On September 11, 1925, I was visiting our experimental apiary at Nappan, N. S., and there found the bees working heavily on second crop red clover. The Superintendent and I walked over the field which was absolutely full of nectar. We watched the bees working the flowers, and after the bees had left certain corolla tubes, we pulled them and found a small drop of nectar still remaining at the base of the tube. Quite a large number of such tubes were examined and in every case it was found that the honeybee left a small drop at the bottom of the tube, indicating that they could not extract it all; but they certainly were getting a large quantity of nectar from this particular field, as I never saw red clover blossoms so full of nectar before or since."

—ABJ—

Clipping the Queen

THIS picture is out of season and yet it is unusual and interesting, showing one of the ways in which queens may be held while clipping the wings. The picture was taken in the Saoha Apiary conducted by the Conventual Franciscan Friars at St. Anthony-on-Hudson, Rensselaer, N. Y. Although studies are their main occupation, the Friars find great pleasure and profit among the bees.

—ABJ—

What To Do With Queenless Colonies

By E. S. Miller,

Indiana.

IT seldom pays to try to requeen a queenless colony after the brood is emerged. Beginners frequently imagine a colony queenless when they no longer find larvae. Often it is a case of supersedure. When apparently queenless, there usually is either a virgin queen in the hive or the bees are old. In either case any queen introduced will with few exceptions be killed by the bees. The time to requeen is before not after they become queenless.

In summer a queenless or laying worker colony should be united with a queenright colony, using the newspaper plan. This consists of removing the cover from the queenright hive and placing over it a single sheet of ordinary newspaper and then removing the bottom board from the queenless hive and setting it on top of the other. The paper will be eaten away in a day or two and the bees will unite without fighting.

In fall all queenless colonies should be gassed. Such colonies consist largely if not entirely of old bees, and if added to a queenright colony in fall months, constitute a liability rather than an asset. Bees emerging before September will consume a large amount of stores during the winter and die in late winter or early spring. What used to be known as "spring dwindling" is simply the dying off of old bees that never should have been wintered.

A better mode of procedure is to kill off all queenless, weak and undesirable stock in September or October, or as soon as there is no longer any brood, and keep the combs of honey over for spring packages. The same may be done with all colonies that would require much feeding. If a queen is caged at the beginning of the fall flow and a queen excluder placed under the hive to prevent virgins mating, the colony may be disposed of in about three weeks when the brood is out or at the close of the flow. A colony will consume approximately 50 pounds between October 1 and May 1 and the honey saved by killing will more than pay for a package next spring. Some may object to killing bees, but it is surely more humane than allowing them to starve or otherwise perish in winter or spring. I would not advise killing normal colonies, at least not in this latitude.

—ABJ—

Success Ratio In Michigan

Fifty to sixty thousand pounds of extracted honey per man seems to be about the limit of production in favorable locations in good seasons. We recall a four-man outfit which produced 240,000 pounds and two outfits of two men each which produced about 100,000 pounds each. Others seem to be in line. This is based on 150 to 200 pounds average, per colony.

One of our non-beekeeping friends, on hearing these statistics, remarked: "I guess we'd better go into the beekeeping business."

In Michigan, between fifteen and twenty thousand people have one or more colonies of bees; but out of that total number, only about 150 are outstanding producers. Only about one in one hundred makes good. A. G. Woodman.

Patrolling the Boundary With Honey

By Natt N. Dodge,

Arizona.

Glorious views of the Grand Canyon greet the Boundary Patrol Ranger.

OCTOBER, to the beekeeper, is a month of frenzied preparation for winter. All colonies must be checked to assure the presence of sufficient stores, perhaps there is still extracting to be done, hives must be packed, or moved to protected winter stands. There are a thousand details to be completed. But October, to the rangers of Grand Canyon National Park, is the month of boundary patrol.

All of Uncle Sam's twenty-five great national parks are wildlife preserves. Inside of their borders no animal, nor any other natural feature, may be injured nor molested. Within these wilderness sanctuaries, all animals shall be permitted to thrive unharmed so that visitors may observe and study them in their natural surroundings. It is the duty of the park rangers to see that this regulation is not broken, and woe be to the poacher whose blood-spattered trail is crossed by a ranger. So, with October 15 and the arrival of deer-hunting season throughout the state of Arizona, the boundary lines of the park are kept under close surveillance. The ranger, like the beekeeper, is on the alert to see that no harm comes to his charge during the pre-winter season.

October, in northern Arizona, is a month of bright, sunny days and frosty nights. The wind whispers through the massive boughs of the yellow pine, and the leaves of the scrub oaks fall in showers of gold and bronze to be heaped in rustling windrows along the thicket borders. Deer, fat from the rich forage of summer, take on their steel-grey winter pelage. Does, with their wide-eyed June fawns, are still followed by their yearling daughters, and range through the woods in small bands. The bucks, their antlers scoured of the last vestiges of summer "velvet" travel together, the rivalries of the mating season not yet developed. And with the opening of the hunting season, the wooded hills and rocky canyons of the Kaibab and the Coconino Plateaus are crisscrossed by red-hatted, keen-eyed hunters, and many a car swings out onto the highway with its antlered burden roped across the hood.

Then it is that each sunrise finds a mounted ranger, clad in the forest green of the park service, picking his way among the dense pinyon, juniper and cliff-rose thickets of the rocky ridges, or trotting briskly through the needle-carpeted, open, yellow pine wood. His ears are alert for the wind-borne crack of a rifle, and his eyes scan the ground for tell-tale tire tracks. Down the steep sides of narrow canyons, among the almost impassable pinyon thickets, across the open sage-brush flats he parallels the boundary line.

Grand Canyon National Park is approximately fifty miles long by twenty miles wide, and has an area of 1,009 square miles. The vast canyon of the Colorado River, a great gash in the crust of the earth, holds most of the park within its red, and slate, and ochre maw. But on each rim of the canyon, within the borders of the park, are many square miles of timberland—the home of countless deer, squirrels, grouse, porcupines, coyotes, cougar, and many other furred and feathered creatures that give life to the forests and bring delight to the more than two hundred thousand visitors that annually gaze enraptured at the world's greatest canyon. Two rangers on the south rim and two on the north rim spend the period from October 15 to November 15 constantly patrolling within and along the park boundaries. These men constitute the annual boundary patrol. It was the writer's duty and privilege during the 1935 season to patrol thirty miles of boundary on the south-eastern corner of the park. Two tiny, single-room patrol cabins, deep in the pine forest, housed him on alternate nights, while a pole corral near each kept his horse from wandering. Within each cabin was a bed, stove, and table, a few utensils, two galvanized cans of water, and the hay and oats for the horse. A water barrel outside supplied the horse, for water is scarce on the Coconino, there being no streams and but an occasional water-hole or "tank" where the deer come silently to slake their thirsts. Prior to the beginning of the patrol period, these cabins were stocked with a month's supply of food for horse and man.

The selection of a month's food

Natt Dodge and his horse among the pinyons and junipers along the boundary line.

Protected from man's killing instinct, national park deer become tame enough to take food from the visitor's hand.

Protection of all plant and animal life is a fundamental national park policy.

IT IS UNLAWFUL
TO INJURE SHRUBBERY AND TREES
TO PICK FLOWERS AND FERNS
TO MAR OR DEFACE ANY OF THE NATURAL FEATURES IN ANY NATIONAL PARK
DEPARTMENT OF THE INTERIOR

supply for a patrol cabin is a greater problem than would appear at first thought. In the first place, the food must last a month without spoiling, and secondly, it must endure freezing. Lastly, it must be protected from mice and "pack-rats," those furry-tailed rodents which are so intimately associated with romantic history of the southwest. Because of its susceptibility to spilling, moisture absorption, and the attacks of mice and pack-rats, sugar appealed to the writer as a rather questionable item of patrol-cabin food supply. And so, included in the list of foodstuffs for each cabin, was a five-pound pail of honey. A brand new, galvanized, garbage can with tight fitting cover was the cupboard in each cabin, and these proved rat and mouse tight during the period. The honey pails were perfect containers in themselves, and stayed on the cabin tables throughout the month.

Boundary patrol is an interesting, and may be an exciting, occupation. In addition to a constant outlook for poachers, the ranger must be a keen observer of the plant and animal life of the area that he covers. His patrol is thorough, and he may discover the presence of disease among animals or trees, he may find that the water holes are dry, or that cattle are encroaching upon the park. He must make an estimate upon the number of deer within the area he patrols, report upon their condition, and he must make note of unusual manifestations of any sort that he may observe.

The Grand Canyon region, 700 or 800 years ago, was populated by Indians of a semi-pueblo type. Over 300 ruins of their dwellings and food caches have been recorded within the park, and more are discovered each season. Arrowheads and bits of broken pottery mark the sites of ancient dwellings, and the ranger may stumble upon a ruin containing relics of the utmost importance to archeological science. Wild horses, more timid and swifter than the deer themselves, still roam over the Coconino Plateau, and the ranger, if he glimpses them, must report their approximate number and as much of a description as he is able to obtain.

And so, from sunrise until sunset, as he makes his way through thicket and woodland, the boundary patrol ranger is constantly on the alert. The glorious, colorful views of the great canyon, the dainty, poised deer which watch the rider pass, the squirrels, crossbills, Clark's nutcrackers and other birds and small mammals seeking the seeds in the cones of the pines, the blazing sunsets, and the paling stars of dawn; all add to the romance of boundary patrol.

During the month in the woods, the ranger may not see more than a dozen men, so that his horse becomes a familiar (and sometimes cursed) companion. Second to his horse, the writer regards honey as his most helpful aid-de-camp. On-the-boundary by sunrise meant out-of-bed by five o'clock, and in the thin-walled patrol cabins with the temperature ten to twenty degrees below freezing, getting out of bed at five A. M. becomes one of the most unpleasant duties of the patrol. Dressing is a minor problem as it consists of merely pulling on a sweater and a pair of shoes, frequently just the shoes. The fire is kindled, water put on to heat, and the ranger steps out into the frosty dawn to be greeted by the eager nicker of the horse awaiting his morning portion of hay and oats. Stars blaze a chilly welcome, and the ranger scans the sky hopeful that there will be no sign of storm. Inside the cabin the fire has spread a cheerful warmth and it is not long before oatmeal is burbling pleasantly, and coffee gives a fragrance to the interior brightly illuminated by a gasoline lantern. A cup, a bowl, the pail of honey, and a freshly tapped can of condensed milk thawed to liquid on the stove, hold an appetizing breakfast. Honey-sweetened oatmeal appeals to the taste, warms the inner man, and, as the saying is, "sticks to the ribs" for many a long, cold hour. Several sandwiches of bread spread with honey are quickly prepared, and an orange is dug out of its frost-protected retreat in the horse's oat barrel. These are crowded into a small pack sack for lunch, the horse is saddled and watered, and with a look around to see that everything is in place, the ranger mounts and turns his horse's head toward the boundary as the pines make feathered silhouettes against the glowing, eastern sky.

Twelve hours later, in the deepening dusk, the ranger pulls up at the door of the other cabin. Dismounting stiffly, for he is numb with cold, he pulls off saddle and bridle, slips a halter over the head of his impatient horse, gives him a drink at the water barrel, and leads him to the corral. With fumbling fingers he unlocks the cabin and starts a fire. A potato is soon boiling, the fragrance of frying bacon arises,

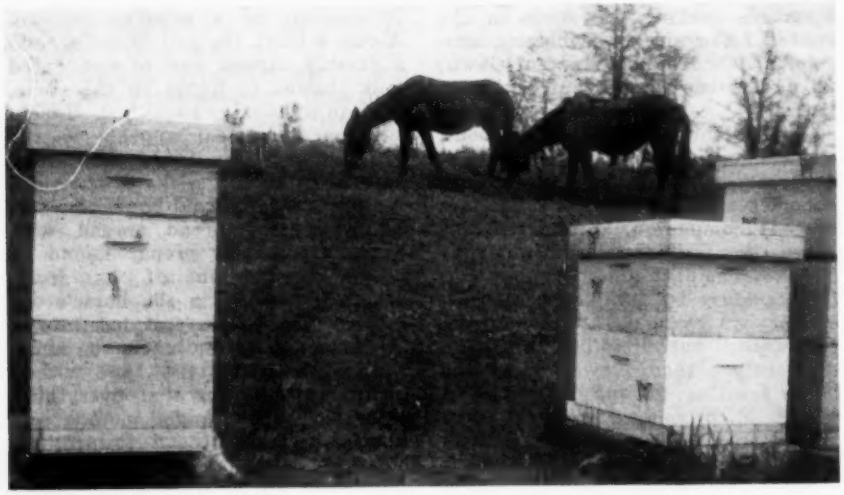
and a pot of cocoa keeps hot at the back of the stove. The lid is pried off the honey pail, and the delicate sweet is used liberally in the cocoa, on the bread, and to augment the rather tasteless syrup which serves to lubricate the interior of a can of peaches. A simple repast, easy to get, satisfying, nourishing, and with a minimum of dishes to wash afterward. Such are the requirements of a ranger's meal.

After supper in the cheerful warmth of the cabin, the ranger records the observations of the day in his pocket notebook, and reads for an hour or so from the stack of magazines with which he had stocked the cabin. With flashlight in hand, he carries several flakes of baled hay to the horse, makes sure that all corral poles are in place, pulls off his boots and sweater, turns off the light, and is oblivious to his surroundings for eight hours, unless, by chance, a pack-rat may knock his tinware off the table, with an awakening crash, or dash across his face with tiny, icy feet.

No, the amount of honey used by park service rangers on boundary patrol will have no appreciable effect upon the honey consumption figures of America. But to the person who thinks of honey as a delicacy and a luxury, the fact that this sweet forms the basis of the simple but practical fare of an outdoors man may throw a different light on the potentialities of this wholesome food. Where dishes are scarce, where variety of spreads, sauces, syrups, and sandwich fillers is impossible; where rats, and frost, and moisture hold sway, honey is the all-purpose sweet. Its container is rat proof, puncture proof, and moisture proof. It sweetens coffee, tea, and cocoa; add flavor to fruits both canned and fresh; forms the perfect sandwich filler, is ideal on pancakes and fried mush; will permeate with its delicate, flower-flavored sweetness oatmeal and other cooked breakfast foods; and, when the day is done and the pangs of an outdoor appetite seem to break down all efforts of the will to wait until supper can be cooked, a spoonful "taken straight" will calm the fierce urgings of hunger until time and a red-hot stove can make a potato edible. Henceforth the writer will always take honey on boundary patrol.

—ABJ—

Horses in the Yard



THEY say anything can be proved by figures. The same may be true about pictures. In September you show pictures of a horse that had met his fate by getting too near bees. Here is a picture of two mules I turned in a lot near my apiary to eat off the grass. There is a windbreak on three sides and I thought the mules would not eat near the hives. Well they did. The picture tells the story.

Not only did they browse in front of the hives, but I found tracks among the hives. Why they were not stung is a wonder. I was working on some colonies and wore a veil at the same time the mules were browsing and bees tried to sting me. Perhaps if I were as slow and unconcerned as the mules they would not have paid any attention to me.

W. E. Grossman,
Ohio.

Beeswax Production In Anglo-Egyptian Sudan

By L. Wilson Greene,

Maryland.

The joint British and Egyptian possession known as Anglo-Egyptian Sudan is located in Central Africa, just south of Egypt. The country has a varied topography. The Nubian Desert to the north and northeast gives way to a fertile central section which, in turn, becomes more luxuriant as the southern border is approached. There the country is watered by frequent tropical rains.

The output of beeswax in the Sudan is relatively small, although there are extensive areas in the south that are potential sources of the product. Some effort is being made to encourage the production of beeswax in this part of the country, and to improve the quality of the extracted wax.

A certain amount of beeswax is produced in almost all of the southern districts and in Kassala and Darfur provinces, which are located in the east and west portions, respectively, where forest or savannah is found.

The method of extraction used by the local natives is extremely crude. The wax is collected from hollow trees or from primitive hives made from hollow logs. Students of beekeeping history will recall that this type of hive has been employed since earliest antiquity. No matter from which source the wax is collected, the colony is destroyed by burning the hive. The crude methods of collection and extraction give a product contaminated with dirt and other extraneous matter to yield a wax of very inferior quality.

Notwithstanding efforts to introduce improved types of hives and modern extraction methods, very little progress in improving the quality of the wax has been made in recent years. This is in marked contrast to the success of modernization efforts in Tanganyika Territory in Southwest Africa, where improved methods have resulted in a high quality of wax which brings a premium in the export market. Incidentally, Tanganyika is surpassed only by India in British Empire beeswax production.

There is no domestic beeswax consumption in the Sudan; the entire production being exported. The Sudan Government reports the

following statistics for recent years:

Year	Quantity Exported (Tons)	Total Value	Value Per Lb.
1933	26	$ 7,963	$0.153
1934	48	14,609	0.152
1935	94	36,351	0.193
1936	112	51,274	0.229

It will be seen in the foregoing table that the quantity exported has increased every year for the last four years. The increase in value is probably caused by a change in the relationship of the Egyptian pound and the dollar, rather than by increased quality demanding a higher price.

There is also transient commerce in beeswax from Western Abyssinia (Ethiopia) through the Sudan. The figures are:

Year	Quantity Exported (Tons)	Total Value	Value Per Lb.
1933	132	$39,416	$0.149
1934	152	46,090	0.152
1935	124	39,834	0.161
1936	85	40,311	0.237

The author is indebted to Mr. H. A. Nicholson, Director, Department of Economics and Trade, Khartoum, for much of the information given in the present article.

—ABJ—

One "Honey Harvest" Display

Here is a picture of a window display I put in one of Orlando's (Florida) largest grocery stores during Honey Harvest Festival Week. At the manager's request, we left the display the second week, as the store was having an anniversary sale and a general advertising campaign.

We had fruit cake, ginger snaps and baked apples, all made with honey instead of sugar; chocolate dipped comb honey; and several hundred recipe folders to hand out during that time. **It really did pep up honey sales.** We have had requests from other stores for window displays.

Tim Tietsema, Florida.

—ABJ—

Shipping Queen Bees Outside Mail Bags

By Alfred H. Pering,
Florida.

THE Post Office Department at Washington recently issued permission for the receipt of combless package bees for transportation through the mails by parcel post without double wire screening. This is a good move. It will save cost and a great deal of needless labor in preparing the cage, and the Department will not lose anything. There never was any danger of employees getting into trouble from bee stings.

These cages are handled as "Outside Mail" not being placed in pouches or sacks. It would be a great step in advance if the Department could be induced to handle queen bees in the same manner. The tossing off of mail bags from fast moving trains when the bags contain queens is not conducive to the long life and usefulness of the queens. There must be danger in such practice.

Many complaints about the short life of queens when they are received through the mails or the early supersedure of queens can with good reason be laid to this rough handling. If queen cages could even be kept from being thrown off the high speed trains and held or routed to be handled by trains which stop at the destination to which the queen is being sent, it would remove a great deal of danger. If the Department would issue an order that these shipments could be handled as outside mail, this handling would require the delivery of the queen packages from other than fast moving trains, and so eliminate the danger of injury while the queens are in the mails and probably thus reduce the losses which both the breeders and the purchasers now have to suffer.

The queen breeders should act on this point and try to get a regulation to this effect. I think the influence of the breeders and the magazines would help in the change.

Queen bee cages when packaged are easily distinguished from other small parcels. If in plain, large letters "Outside Mail" were printed at the top of the address card, that would attract the postal employees' attention to the shipments and once started as outside mail the package would continue on to destination in that manner. It would not be long before the habits of outside handling would become fixed. I feel that this is a matter of much importance and should result in saving and satisfaction to the beekeeping industry without imposing hardships on anyone.

—ABJ—

When Bees Are Cross

When I expect bees to be cross, or when working with a cross colony, I put a little propolis in the smoker. Only a pinch is necessary each time fresh fuel is added. It gives the smoke a delightful odor, and is marvelously effective in quieting the bees. Save your propolis scrapings and try it.

Edgar Abernathy,
North Carolina.

The Control of Ants In the Apiary

By Harry I. Rich,

Louisiana.

TECHNICALLY, a civilization is a state of society able to provide for the future by intensified endeavor which, in the case of man of course, means agriculture. There was no civilization before man could till the soil and wait for the harvest, then, having gathered his crop, he had to be able to store it for the lean days to come. When he achieved this, he achieved greatness.

But there are older civilizations—the ant and the honeybee lived in a social order even before man became social.

Ants are of far greater economic importance to us than we think. While spending a summer in a commercial queen-breeding yard, I was able to observe the destruction these little insects do. No order or plan in the South can be made without considering these venerable demons of the dust. I have seen nuclei mating boxes destroyed by the hundreds and havoc wrought in full strength colonies.

There are two species which attack bees; one, a small black honey ant, the other twice as large and very red which destroys the brood. They do not restrict their activity only to the brood nest. After an attack by these ants, the bees swarm out and in a few days the hive is cleaned of brood and honey. Robber bees help ants after the colony is left and then the wax moth finishes the job.

The ants live in colonies like bees and are composed of several kinds of individuals. Wingless workers and exceptionally developed individuals, each with a tremendously large head bearing a pair of sheer-like jaws used in combat. Their victims are seized between the abdomen and thorax and the connection severed. These are the so-called soldier ants. There are also fertile wingless males and females.

Most nests are established by a single young fertile queen which, soon after mating, chews off her wings, builds a small nest, lays several eggs and then at first cares for the brood. The first larvae to emerge are workers which develop rapidly and soon take over the responsibilities. By then, the young queen is practically starved for these first larvae are fed on material secreted from her body. In summer some species swarm like bees and establish colonies.

Ants, like the honeybee, undergo a a complete metamorphosis passing through the egg, larva, pupa and adult stages. The larvae and pupae are often mistaken for eggs. Many species of ants secrete formic acid and when fighting inject this fluid into wounds made by their jaws. The victim dies a horrible torturous death. Some varieties are provided with a sting like worker bees.

Ant colonies consist of many thousand individuals, the greater number of which are workers that perform duties similar to the worker bee. Their homes are made in different ways although each species make the same type of nest.

The earth dwelling ants build homes which vary from a simple tunnel to large complex mounds containing a network of passages, galleries, food chambers, snug breeding chambers, nurseries and waste disposal cavities. The large black carpenter ants of the wood-tunnelling species, make the most elaborate homes, frequently occupying the greater part of old tree trunks. The tunnels and chambers are cut by the jaws of the worker out of solid wood.

The weaver ants of the tropics weave homes of silk. The larva, when ready to spin its cocoon, is carried back and forth so as to leave behind threads of silk fiber woven into the walls.

Ants have been divided into three classes according to their manner of securing food. The predatory ants, represented by the tropical driver or army ant, will consume every animal found in its path while on the march. The pastoral ants live by keeping aphids or plant lice as we would dairy cattle. These lice are protected from their natural enemies and exposure by a shed-like structure of sod built to house them. During the day the lice are driven out to pasture. Some varieties of this class take corn plant lice to the roots of growing corn. When one plant is infested another colony is established on the next plant and so on down the row. The ants obtain honeydew by stroking the bodies of the lice lightly with their own antennae.

There are also agricultural classes which collect husk and store seeds in granaries and crush them to provide soft food for the young. Others who cultivate fungi in soils specially prepared in gardens within their nest. Fertilizer is applied and weeds destroyed.

There are still others that are like slave holders. They make war on neighboring colonies, sack the brood nests, take off the brood. When the unfortunate captives emerge, they behold a world of slavery in which there is nothing seemingly objectionable for they secure food for their captors who care for them well. When their holdings diminish, the slaveholders wage war on another colony and so on through the year. If for some reason they are prevented from capturing slaves, they die miserably, as they are not able to care for themselves.

An interesting feature of ant life is trophallaxis or obtaining food from each other's bodies. Food is stored in a second stomach from which it is regurgitated by the nurse ants not only for the young but for any other individual that desires to partake of it. The act is apparently accompanied by pleasant sensations for they seem to delight in it.

The honey ants of the South store food which they take into the second stomachs until their bodies become greatly enlarged, being useless for other purposes. Then they cling to the tops of their nests like living cells of food. In Mexico, the Mexicans regard this variety as a dish of rare excellency.

To exterminate the small black ants or any honey eating variety, I suggest the purchase from a local druggist of a small amount of tartar emetic—a 10c package is enough to make a pint of poison when mixed with a syrup of honey and water, in equal parts.

This is placed in a regular government ant poison can which is essentially a baking can with two sides of the rim indented inward to admit the ants and so arranged as to exclude any bees. These containers may be placed in different parts of the apiary, preferably in or near the ant trails. In a few days these wandering insects will have all but entirely disappeared.

Red ants require a different treatment since they will not eat any of the syrup. Therefore, carbon bisulphide is used. Drive a stake, iron rod or pipe in the middle of what appears to be the nest, pour about half a pint of carbon bisulphide into the opening. Close the hole with earth. All openings or passages are closed with earth. Carbon bisulphide is an unstaple chemical giving off hydrogen sulphide which is a poisonous gas. This gas seeps through the innermost

recesses of the chamber destroying queens, males, workers and soldiers. When you buy the carbon bisulphide, or "hi-life," and have any left, bury the container until you have further use for it. It is very inflammable.

These two methods are not always practical. You may find you have selected an apiary location in an ant infested area and the bees must be given immediate protection. I have found that hive stands are indispensable, whether for mating nuclei or full strength colonies. On the stand in the exact position where the bottom board is to rest four points are taken two inches in from the corner of the bottom board. At each point, fasten a common bottle cap with a good intact cork lining. Drive a 16 or 20 penny nail through the center of the cap leaving the head about 1¼ inches out. Drive the nails absolutely perpendicular to gravity, otherwise the weight of the hive will bend them. The bottle caps are then filled with used grease or cylinder oil. I have found that differential grease will never leak out and will not wash out with rains. The hive is then carefully placed on the nail heads. By following these instructions, it is impossible for any kind of ant to get to the hive.

It it always good practice to have a regular program to eradicate ants and not depend on just this form of protection as nails and labor are costly. From the information given, you should be able to determine what kind of ant is bothering and devise some method of your own if those suggested do not suit your practical needs.

—ABJ—

Marking Frames

No device has ever been invented for grading combs which is as effective and reliable as the decision of the bees. Their decision is final and no amount of argument or coaxing will cause them to reverse their decision. When inspecting my bees in the spring of the year, I carry a box of thumb tacks with me. When I find a comb in which there is an excessive amount of drone brood or which is otherwise unfit for further service in the brood nest, I simply push a thumb tack into the top of the top bar. Such a marking is permanent and clear for the bees do not propolize the head of the tack.

When supering my colonies, I always see that such marked frames are placed above the queen excluders so that they can be disposed of when they are extracted. If it is desired to retain them as permanent extracting combs, it can be done without any fear that they will get into the brood nests through mistake.

It is sometimes desirable to mark frames for other purposes than that already mentioned. This can be done by means of tacks of different colors. My own bees are usually wintered on aster honey. I find it very convenient to mark such frames of this honey as may be left in the hives when the early honeyflow starts, so that they will not be taken to the extractor with frames of light colored honey.

Cecil F. Siders,
Ohio.

—ABJ—

Warm Fall in Oregon

We had an unusually warm fall, and brood rearing continued a good deal longer than was to be expected. However, my bees are in good shape this winter.

Harold Luckner, Oregon.

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H. E. GRAHAM, Cameron, Texas

Meetings and Events

In this department heretofore the reports of meetings which have already been held have been given a reasonable amount of space. We have been criticized many times, however, for publishing detailed reports of past meetiings which do not give information other than the general facts about attendance, the speaker's names and subjects. That is usually quite worthless material to readers not members of the particular association about which the report is being made.

Hereafter, we shall not use reports of past meetings other than summarized reports of papers given before the meeting or summaries of talks by the speakers, or items of future events in the affairs of the association. We do not want reports of a general and unimportant nature. Please bear this in mind when sending material for "Meetings and Events."

Detailed statements of meetings to come with dates, places, speakers and subjects are always welcome. Even though they may have to be reduced because of the limitation of space, every effort will be made to give them advance po ition.

Scullen Teaches by Extension.

In Portland, Oregon, a course in "The Habits and Management of Honey Bees" was taught by Associate Professor H. A. Scullen, of Oregon State College, during the fall term of the Portland Center of the State System of Higher Education. Designed for those in the metropolitan area interested in bee culture, the course consisted of a two hour lecture and discussion period every Tuesday night. On one evening a five-reel film was shown, "The Realm of the Honey Bee."

"The students secure credit, of course, but only a very small percentage of them are taking work for credit," said Professor Scullen. Some are themselves beekeepers, some are teaching nature study, a few are stenographers, one man is a physician, one sells beekeeping equipment, and several keep bees as a hobby. Petitions have come from others who would have liked to take the course, but did not hear about it in time. In the spring term it may be available again in the Portland Center, which offers evening courses for the University, the State College and the Normal Schools."

Donald Wood, General
Extension Division, Oregon.

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New Jersey.

The growing popularity of comb honey because of its "eye appeal" and the importance of packaging were stressed by Charles Mraz of Middlebury, Vermont, in addressing members of the Beekeepers' Association at their annual convention in Trenton, N. J., January 27.

"Packaging plays a large part in the marketing of any product today," Mr. Mraz said. "Admittedly the boxed comb of honey is very attractive because it is packed and sealed by the bees themselves, and there are many uses for it, but it is still difficult to think of it as sweetening for coffee or on cereal at breakfast," he added. Its use by bakers was one of the important aspects for extracted honey mentioned by Mr. Mraz. He concluded, "I believe there will be a much wider use for extracted honey in commercial baking and in other

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Three-pound	3.15 each	2.40 each
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types of food manufacture as soon as beekeepers can provide a uniform product with less variation in moisture content, flavor and color."

William Kampfe, of Morristown was elected president, with others being named as follows: First vice-president, Leslie Thran, of Irvington; Second vice-president, Frank Fekel, of Vineland; Third vice-president, Harry Conner, of Stockton, and secretary-treasurer, Elmer G. Carr, of Pennington. Also addressing the convention was Huber Root of Medina, Ohio, who discussed the influence of transportation on the future of honey.

New Jersey News Service.

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British Columbia Lectures.

The British Columbia Honey Producers Association announces a series of lectures in March and April. Everyone interested in beekeeping is invited to attend. There is no charge for admission. The following lectures will be given:

March 11—"Bee Management to Secure Honey Production."—E. R. Freeman, Fraser Valley Inspector, Room 10, 423 Hamilton Street.

March 25—"Care of Package Bees and Introduction of Queens."—Frank Johns, Division Secretary, Room 10, 423 Hamilton Street.

April 8—Round Table Discussion —J. W. Wood, Division President, Room 10, 423 Hamilton Street.

These three lectures were preceded by two in February by Prof. John Davidson and A. W. Finlay, Provincial Apiarist.

—o—

Kentucky.

The Kentucky Association held its fourteenth annual meeting at the Farm and Home Convention, opening January 25th, at the University of Kentucky in Lexington. Speakers: President L. E. Gooch; W. A. Price, of the University; Lawrence King, Whitesburg; H. H. Jewett, of the university; George Saylor, deputy inspector, Harlan; Dr. E. F. Phillips, Cornell University, New York; L. H. Townsend, of the University. The business meeting resulted in the re-election of L. E. Gooch as President and of W. A. Price as Secretary.

Reported by
W. A. Price.

—o—

North Carolina Begins Inspection.

January 19th, a group of beekeepers met in the pleasant home of Mr. and Mrs. Jordon, near Wilmington. Satisfactory crops were reported for 1937 and honey disposed of at good prices. Alders and maples were already in bloom although the weather was too cool for much bee activity.

Much interest was shown in the new state Inspector, P. G. Craddock of Raleigh. With the extension work of C. L. Sams, backed now by an efficient inspection system, North Carolina beekeepers are fortunate.

Reported by
M. G. Dadant.

—o—

Michigan to Hold Annual Beekeepers' Short Course, Horticultural Bldg., M. S. C., March 8-11, 1938.

A program of this course is available on application to Director of Short Courses, M. S. C., East Lansing, Michigan. Lectures and demonstrations covering the important phases of commercial beekeeping will be given by the staff, comprised of Mr. Floyd Markham, Ypsilanti, long a leading commercial honey producer, J. C. Kremer and R. H. Kelty. Anyone, beginner or carlot producer, is welcome.

—o—

Delaware State Beekeepers Meeting.

The annual meeting of the Delaware State beekeepers held at Camden-Wyoming, Delaware on January 15th was attended by seventy-seven persons. The Secretary, Dr. L. A. Stearns, gave a detailed report which showed, among other things, a membership of 53.

The Assistant Director of Extension of the University of Delaware, Dr. A. D. Cobb, extended a welcome to the group and indicated the desire of the University staff to be of service to beekeepers and fruit

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growers in working out their mutual problems.

Mr. Robert S. Filmer, Associate Entomologist of New Jersey discussed "Fall and Spring Management." He stressed the need of strong colonies always, which he claimed could not be had in one story hives. Neither could that objective be realized without an abundance of stores always in the hive. This abundance of stores could be assured only by a second story full of honey except in the heaviest brood rearing part of the season.

The probability of American foulbrood showing in the colony must always be kept in mind, claimed Mr. Filmer, and nothing added to a colony and nothing taken from it until one had made sure no brood disease was present.

Speaking for New Jersey conditions Mr. Filmer advised keeping the first story as a clear brood nest by lifting any honey to the second story about September first. This gives the queen opportunity to lay and also gives a place for pollen stores which will be so much needed in spring.

The spring management, about March first is but little more than raising covers to see the size of the cluster. If then any colony is found abnormally weak, it can be given a careful examination. If any are dead, they are put inside the building safe from robbers.

Even if no disease is in the apiary, robbing is extremely undesirable since robbers long remember their pilfering and make trouble for several weeks when they get a chance so to do.

The only other spring management advised was to add a third story over an excluder if more room is needed before the surplus honeyflow arrives.

Mr. R. D. Barclay, apiarist, Riverton, N. J., discussed "Locality and Commercial Operations." This had largely to do with management of bees for pollination purposes.

Some of the pitfalls into which falls the orchardist who attempts to keep his own bees for pollination were pointed out. Chief among these is the loss of flying bees by drifting back to winter location when moved to the orchard. Another is the delusion that package bees are efficient pollinizers. There is abundant evidence that bees do not enthusiastically go afield when there is no brood in the hive of package bees, irrespective of their size.

Dr. W. J. Nolan of the Bee Culture Laboratory, Beltsville, Md., discussed bee brood diseases principally although he also referred briefly to the adult bee diseases, Nosema and Acarine disease. He also mentioned the bee louse which has not been discovered outside of a very limited area in one of the North Atlantic states.

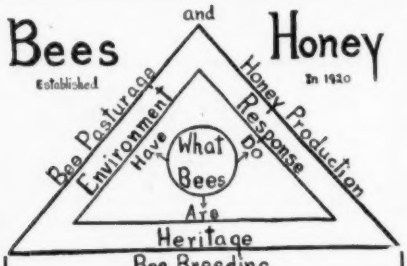
With the aid of slides, Mr. Nolan described at some length the symptoms of American foulbrood and European foulbrood. He referred to B. larvae, the organism causing A. F. B. as a "tough customer," saying that under laboratory conditions, it had been caused to grow after being boiled several hours.

Killing the bees in hives infected with American foulbrood by cyanogas and burning the combs and frames and bees in a pit, which is afterward covered, was recommended. The hive body, top and bottom can be scrubbed with hot lye water or hot soap suds, said Dr. Nolan.

"Roadside Marketing of Honey in Delaware" was discussed by Mr. John M. Ames, Assistant Extension Specialist.

A survey had been made of roadside markets which varied from a simple bench with some method of shading it to a substantial and attractive small building.

This survey showed that of seventy



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nine roadside markets in the state, there were 43 operating at that time. Of these 25 sold extracted honey and 16 honey in the comb. The trade largely, is to transients.

Trade in honey falls off as one nears Wilmington. Three possible reasons for this are (1) customers in Northern Delaware may not be satisfied with the product; (2) no definite attempts have been made to establish a honey market and (3) the supply is obtained from local food stores instead of from roadside stands.

But four of the markets displayed a honey sign. Objections raised by market operators to handling honey were, during hot weather honey runs out of the combs and becomes messy and often becomes infested with ants.

The survey showed that demand greatly exceeds the local supply of both comb and extracted honey and that selling prices are fairly constant throughout the state.

The last discussion was by Mrs. Pearl MacDonald, Nutrition Specialist of the University. It was listed "The Busy Bee the Friend of the Family."

The nutritional value of honey, said Mrs. MacDonald, is high. It provides energy, proteins, minerals and flavor. Its appeal is unique.

The sugars of honey are especially desirable an they are pre-digested. The slightly laxative effect of honey should be overlooked, neither should the great diversity of uses to which honey can be put. Honey can be highly recommended both from a nutritional and economic standpoint.

Officers elected for the ensuing year are, President, John L. Phillips, Newark; Vice-presidents, C. O. Sampson, New Castle County; Sam Walker, Kent County; Jos. W. Waller, Sussex County; Secretary-treasurer, Dr. L. A. Stearns, Newark, Delaware.

Reported by
E. G. Carr,
New Jersey.

— o —

Centre County (Penna.) Meeting

The annual meeting of the Centre County Beekeepers Association will be held in the office of Ralph C. Blaney, county farm agent, post office building, Bellefonte, on March 31, at 7:30 p. m. Edwin J. Anderson will speak on bee management.

We are arranging for two outdoor demonstrations to be held in April at the apiaries of A. J. Burrell, Millheim, and A. R. Houser, Rock View, on dates to be announced in the April issue.

Abram Houser, Sec'y.

— o —

Maryland.

The Maryland State meeting was held at Frederick, January 15th, with Dr. E. N. Cory presiding for some

IS THE TIME . . . to place your order for our full weight packages and young laying queens. The drones are excluded and the queens are carefully selected.

Young bees, Lightweight cages. 2-Lb. package $2.45.
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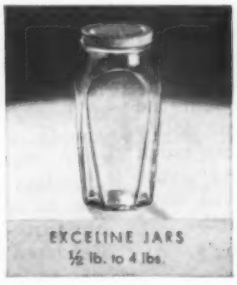

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1938 Packages, From April 1st, on

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SERVICE---We have the package cages made. We have the young bees; 1938 young queens; experienced men to facilitate every shipment.

PRICES--- 2 Lb. package with young 1938 queen $2.45
3 Lb. package with young 1938 queen 3.15

15% Discount to dealers.

75 beekeepers and guests. Speakers: Dr. Braithwaite, National Bureau of Standards; Norris James, Maryland comb honey producer; James I. Hambleton; M. G. Dadant; A. D. Hiett.

Fifty dollars in prizes were awarded for a honey exhibit. George Abrams, College Park, is planning a series of sectional meetings during spring and summer. He is to be congratulated on the interest his work has aroused among progressive Maryland beekeepers.

Reported by M. G. Dadant.

— o —

Wayne County (Michigan) Meeting March 13.

The Wayne County Beekeepers Association will meet Sunday afternoon, March 13, at 2 p. m., at the Club Service, 10216 Plymouth Road, Detroit. We are planning a question box, a talk on spring management by Floyd Markham, and some timely advice from our county agent, Mr. Beesemer. Everyone is invited to attend the meeting and to join the association. Dues are only one dollar a year. If you don't get that much good from your first meeting, come to the next one and you will have more than your dollar's worth.

Cecilia Blakely, Sec'y.

New Association Organizes.

The Northeastern Oklahoma Beekeepers Association completed its organization at a meeting Monday, January 24. At present there are twenty-two members in the new association and as many more applicants for membership. The new organization is beginning its work with enthusiasm.

J. W. Moore is president, Oren J. Adkins, vice-president, and the secretary-treasurer is A. B. Harris, 217 N. 16th St., Muskogee.

— o —

In West Carolina.

The Henderson County Association met at Hendersonville, January 24th, with beekeepers from Pope and Buncombe participating. Some 70 present with Dr. Norris presiding. Speakers: Mrs. Melton; Mr. Carlin; Mr. Louradour; C. L. Sams; A. D. Hiett.

Beekeeping is on the increase in this section with sourwood as the main crop. No trouble to dispose of honey to a special trade which demands pure sourwood. The 1937 crop was a disappointment; 1938 promises to be better and beekeepers are already preparing the spring buildup.

Reported by M. G. Dadant.

Florida Auxiliary Activities.

The Ladies Auxiliary of the Florida State Beekeepers Association held its first meeting in Winter Haven, on October 8. A large number of women were present, and thirty-six of them joined the new organization. At the Florida fair held at Tampa from January 25 to February 5, the Ladies Auxiliary sponsored a honey cookery contest. Prizes were offered and Mrs. Jensen, of Madison, Wisconsin, and Mrs. Gastoff, of Tampa, were judges.

There were forty-seven entries in the contest including fruit cake, nut cake, nut bread, cloverleaf rolls, gingerbread, doughnuts, muffins, jelly, marmalade and candy. Mrs. Robert Foster sold dripcut servers during the fair and all over the purchase price went into the Auxiliary treasury. Mrs. Jensen was with us, putting on demonstrations every day. Her booth was always crowded with men and women, all interested in learning what can be done with honey.

At the mid-winter meeting in Largo, luncheon, in which honey was utilized, was served to over 100 people. Afterward separate meeting of the men and women were called to order. Mrs. Robert Foster,

Iverbey Apiaries, Bunkie, Louisiana.

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QUEENS, any number, 75c each. - - - - 15% discount to dealers.

PLAY SAFE -:- **ORDER EARLY**

TRUCKERS:—Come where you can get your bees when you want them.

of Gainsville, gave some of the highlights of the Washington meeting, and Mrs. Maurice Dadant told what the Illinois Auxiliary is doing. Mrs. Jensen spoke and demonstrated some uses of honey in cookery and afterward handed out recipes.

Mrs. A. C. Lundin,
Secretary-Treasurer.

— o —

Iowa Spring Broadcasts.

The spring series of radio chats for honey producers will start again over WOI on Monday, March 14 at 12 o'clock. Mark this date now on your calendar so that it will be possible for you to plan ahead for this visit and to be with us at that time. Remember that these chats are for the benefit of the honey producers of Iowa and they cannot give the greatest benefit to the greatest number without some cooperation on the part of the listeners. Producer comments on the material given through these chats is desired.

— o —

Yakima Protests.

The Yakima Association at a recent meeting protested the high freight rates on honey. Idaho beekeepers can ship to Seattle at the same rate as Yakima valley producers. The members also object to tariffs that provide for a higher freight rate in inter-state shipments than the rate prevailing within the state.

I. N. Neill,
Washington.

— o —

Goodman For Vancouver Third Term

G. E. Goodman was recently re-elected to his third term as president of the Vancouver Island Beekeepers Association. A. H. Curtis was also retained for the third time as secretary-treasurer. Miss R. Arnott, E. Scholes, H. Ball, G. Weismiller, A. J. Preece, J. Hay, A. Hardy (Duncan), and A. J. Bird formed the executive committee with A. J. Bird also auditor. Arrangements have been made for speakers for each monthly meeting during the remainder of the season.

F. H. Fullerton,
British Columbia.

— o —

Manitoba Production Up.

Manitoba's production of honey has increased from 903,000 pounds in 1921 to 8,000,000 pounds in 1936, said C. B. Gooderham, Dominion Apiarist, addressing the Manitoba Association at their thirtieth annual convention in Winnipeg recently. Mr. Gooderham urged the advisability of Dominion Advisory Board for honey producers, to keep them informed on overseas markets, grades and transportation rates.

F. H. Fullerton,
British Columbia.

— o —

Manitoba Chooses Laurin.

Rev. A. H. Laurin, Letellier, was elected president of the Manitoba Association. Brother T. Pineault, Otterburne, was re-elected honorary president, and L. T. Floyd, Provincial Apiarist, is secretary-treasurer, as usual. J. W. Braithwaite, Brandon, was elected first vice-president; S. T. Smith, Oakbank, second vice-president; directors, A. Lacroix, St. Claude; J. C. Rippengale, Oakbank; H. A. Roberts, Portage la Prairie; H. Brodeur, St. Adolphe; Paul Trudeau, Isle des Chenes; Jacob W. Waldner, Benard; J. H. Peddie, Russell; William M. Duncan, Carman; Henry Mueller, Steinbach; Edward Braun, Brandon, and Prof. A. V. Mitchener, University of Manitoba.

The convention passed a resolution requesting the government's official stamp be placed on all packages of honey when inspected.

Secretary Floyd reported the beekeepers of the province purchased $100,000 worth of bees last spring, an increase of $10,000.

F. H. Fullerton,
British Columbia.

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QUEENS—3-BANDED ITALIANS

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5 typewritten pages, 10 to 15 minutes 10c
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2 typewritten pages 5c
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2 typewritten pages 5c
The Versatile Sweet—
2 typewritten pages 5c

LEAFLETS

"100 Honey Helpings"—Revised 1937, 32 pages, information on honey and its uses and 100 tested recipes. (No samples sent.)
"New Uses for Our Oldest Sweet"—Revised 1938.
"Flavor Harmonies with Comb Honey"—Uses and care of comb honey.
"Use Honey in Canning and Preserving"
"It's a Honey"—12 ALL HONEY Recipes.
"Food Favorites Made With Honey"
"Honey Facts"—formerly called Using Honey. Revised 1938.

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New Marketing Agreement

The Agricultural Adjustment Administration of the United States Department of Agriculture, under date of January 21, announces tentative approval of a proposed Marketing Agreement to stabilize business conditions for breeders and handlers of package bees and queens in the United States. After final ratification, this agreement will replace the one in effect since May, 1934.

Under the new agreement, the handlers of bees and queens would be required to file with the control committee adminstering the program the prices at which they offer bees, comb packages and queens for sale, and to sell at the prices which they file. It would also prohibit certain unfair methods of competition and trade practice.

Copies of the tentative agreement have been mailed to handlers. If it is signed by a majority and favored by two-thirds of the producers affected, an order may be issued making the terms of the agreement applicable to all breeders.

Under its provisions, any handler may at any time revise his prices and terms of sale by filing with the control committee ten days before the schedule is to become effective. Any handler could also sell or offer to sell at prices, terms and conditions filed by any other handler simply by giving notice to the control committee.

The selling of bees and queens from infected apiaries and the making of secret refunds and rebates are the principal practices which the program would prohibit as being unfair trade practices.

This agreement provides for a control committee of six members, five members to represent the handlers in the states of Alabama, California, Louisiana, Mississippi and Texas, and one member to represent handlers in other states.

Further information concerning its adoption and ratification will be given later.

—ABJ—

Moisture in Texas

We have plenty of moisture in the soil (January 17) and should have a good season.

Whitman Coffey,
Texas.

PACKAGE BEES AND QUEENS

Ready as early as weather will permit shipment. Hustling Three Band Italian or Thrifty Gray Caucasian. Packages from either stock will prove fine honey producers. Every package guaranteed. 2-lb. with Queen $2.45. 3-lb. with Queen $3.15. Discount to dealers.

CRENSHAW COUNTY APIARIES
Rutledge, Ala.

Crop and Market Report

Wintering.

Bees are wintering very well in New England and along the Atlantic seaboard including New York and Pennsylvania. Throughout the South, colonies are in fine shape for spring. In California bees either have wintered or are wintering well. In the intermountain states the bees are coming through the winter in good shape with a few exceptions in Montana and Colorado where the winter has been unusually mild. Colonies in the Dakotas and states eastward along the Canadian border are wintering well. In the plains states, on the other hand, colonies are coming through in only fair condition. This is owing to their depletion at the beginning of the winter. Where colonies were fed they are expected to come through in reasonably good shape. In the central states there have been too many opportunities for bees to fly and too many warm days have caused bees to consume stores too rapidly. Conditions, therefore, are spotted, varying with the localities which have had the unseasonable spring weather. It is still too early, of course, to have any definite report on the wintering of bees in the Canadian provinces.

Possibilities for Increase Next Season.

In New England not much increase is contemplated, indications being that beekeeping in general is not expanding in that area. A few bees change hands. That is about all. In Pennsylvania and New York and along the coast little increase is expected except that necessary to make up for winter loss, which apparently will be light.

A few localities in California anticipate increase as much as 25 per cent. In the flood areas a considerable number of packages will be used to replace the ones lost by flood damage. Inasmuch as bees went into winter in excellent condition, existing California apiaries will not likely be increased very much. There are indications, however, that many new beekeepers are arriving on the scene there. With the exception of Colorado and parts of Montana, where the weather has been mild and the probable loss heavy, few intermountain states are contemplating increase. In South Dakota no season is contemplated. On the other hand in North Dakota beekeepers are more optimistic and are planning to increase perhaps as much as 25 per cent. Elsewhere in the central region, no increase is contemplated except in those areas which were fortunate enough last season to harvest good crops of honey. It seems evident that the increase will be made largely by those who are already experienced in honey production and that not many new beekeepers will be undertaking work with bees this season. In Canada, on the other hand, particularly in Manitoba, beekeepers are feeling the effects of an unusually good harvest last year and are planning a large amount of increase.

Honey Plants.

Throughout New England, New York and Pennsylvania honey plants are in average condition at this time of year. Farther south along the coast, the dependable honey sources are in fine condition. In Georgia ti-ti is now yielding freely and in Florida the prospects for an orange flow look very good, indeed. Throughout the South, honey plants could hardly be in better shape than they are now. Over most of California honey plants are in normal condition. There should be a good flow from orange this year provided there is no frost. Sage and buckwheat are backward. In the intermountain states honey plants are in excellent condition where there has been snow to cover them. Some areas in Montana and Colorado complained last month that the high winds had blown away what snow had fallen and that plants which had been exposed might not survive. In South Dakota the condition of the honey plants is poor but in North Dakota sweet clover was plentiful last fall and the mild winter has been ideal for its preservation. Over the rest of the northern states conditions are very spotted, indeed. In some areas plants are well preserved but, of course, a great deal may happen yet. The definitely gloomy areas as far as honey plants are concerned are in the plains states. Most of these states report practically no plants at all for next season. In the central states, honey plants are uniformly good. Spring rains will, of course, be necessary to cause them to yield nectar.

Package Bees and Queens
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Service - Satisfaction
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Bees and Queens
Leather colored Italians. Queens mated from large three frame nuclei.

2-lb. package with queen	$2.45
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4-lb. package with queen	3.85
5-lb. package with queen	4.55
Mated Italian queens	.75

No deposit to book your order.
Write for circular describing our special full weight packages.
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HILLOCK'S THREE-BAND ITALIAN BEES
Full weight packages with select young laying queens. Shipped when you want them by special fast express. Health inspection certificate with every shipment. Correspondence invited.
Regular prices. Quantity discounts.
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CAUCASIAN BEES AND QUEENS, extra gentle, prolific, hardy and winter in the North like their own country. Long-tongued, dependable workers. Prices, 2-pound package bees with queen $2.45; 3-pound package bees with queen $3.15. 15% discount to dealers.
P. B. Skinner Bee Co., Greenville, Ala.

GOLDEN QUEENS, excellent quality that produce hardy, gentle workers, personally reared. Untested 75c; tested $1.50. Health certificate Satisfaction guaranteed. O. E. Brown, Route 1, Asheboro, N. C.

ITALIAN QUEENS, Package Bees, Nuclei. Take honey-wax as payment. Homer W. Richard, 1411 Champnoile, El Dorado, Ark.

GENUINE THREE BANDED ITALIAN Bees and Queens for 1938. Alamance Bee Company, Geo. Elmo Curtis, Mgr. Graham, N. C.

PACKAGE BEES WITH QUEEN INTRODUCED eliminates loss of queens. Send for free folder. A. O. Smith, Mount Vernon, Indiana.

PACKAGE BEES that will please you. Sternenberg Bros., Lockhart, Texas.

MACK'S QUEENS. They speak for themselves. For prices write MACK, The Bee Man, Robinson, Ill.

TENNESSEE Package Bees and Queens. A superior strain of Italians. Great honey gatherers. Agreement prices. N. S. Gladish, No. 5 Hobbs Rd. Nashville, Tenn.

PACKAGE BEES, Italian queens. Alonzo McKay, Route 1, Vicksburg, Miss.

FOUR FRAME NUCLEI, with plenty sealed brood, honey and young queen, making a rousing strong colony for main honeyflow, have proven highly satisfactory to northern beekeepers. No disease. Write Wharton County Apiaries, Wharton, Texas.

UTILITY BEAUTY STRAIN Pure Italian Bees and Queens. Formerly "Smith Apiaries," Spring Hill, Tenn. Here are better rearing and shipping conditions. We produce the same gentle, honey getting strain and solicit again your patronage. 2-lb. pkg. $2.50; 2½-lb. pkg. $3.00. Select young queens 75c; select tested or export $1.50. Wallace R. Smith, Mt. Vernon, Ind.

THE VERY BEST three band Queens and Package Bees to be had. All guranteed. backed by thousands of dollars of capital. Write for prices, description before buying. The Robinson Apiaries, Bartlett, Texas.

YOU will be interested in my CAREFULLY PREPARED packages of three banded Italians. Inquire today. Hugh Graham, College Station, Texas.

NOTICE YOU NORTHERN BUYERS, Golden Italian bees and queens that get the honey. 2 pound package $2.45; queens 75c, Oregon Bee Co., Route 1, Box 296, Salem, Oregon.

ELEVATION APIARIES, Milano, Texas—Offering comb and combless packages with careful service. Write for April prices.

MILLER BROTHERS, Three Rivers, Texas. Only exclusive Caucasian breeders west of the Mississippi. Packages with queens introduced.

PACKAGE BEES Supplied with Young Italian Queens. Excellent quality, that produce hardy, gentle workers; personally reared. 2 lb. package bees and queen $2.45; 3 lb. package bees and queen $3.15; queens 75c. Discount to dealers or on large orders. Health certificate furnished. Satisfaction guaranteed. Hafley Bros., Gause, Texas.

MOUNTAIN GRAY BEES. Write for our catalog; in it will be found our prices and description of our genuine Caucasian bees. Bolling Bee Co., Bolling, Ala.

SPECIAL SPRING SELLING. Quality bred Italians. Two pound packages in quantity, with select 1938 queen, $2.08 each. Three pound $2.68. Select untested queens in quantity, 64c each. Write for prices on three frame nuclei. Little River Apiaries, Box 83, Gause, Texas.

HONEY FOR SALE

LIGHT AMBER Mangrove honey in new sixties. Peter W. Sowinski, Fort Pierce, Florida.

HOWDY'S HONEY: Small lot of white clover and amber, mixed extracted in sixties still on hand. Howard Potter, Ithaca, Michigan.

FINEST quality clover honey. Either shallow comb or extracted. Ton lots or carloads. Sioux Honey Association, Sioux City, Iowa.

FOR SALE—Extracted sweet clover honey, Russell D. Smalley, Rippey, Iowa.

WELL RIPENED clover extracted sixties 8c; amber 7½c. H. G. Quirin, Bellevue, Ohio.

WHITE sweet clover extracted in sixties. Case or ton lots. Satisfaction guaranteed. Sampe 20 cents. Harry C. Kirk, Armstrong, Iowa.

NORTHERN MINNESOTA clover basswood honey. F. O'Donnell, Rush City, Minn.

FOR SALE—Northern white extracted and comb honey.
M. W. Cousineau, Moorhead. Minn.

CHOICE Michigan Clover Honey. New 60's.
David Running, Filion, Michigan.

HONEY FOR SALE—Any kind, any quantity. The John G. Paton Company, 230 Park Avenue, New York, New York.

HONEY FOR SALE—All kinds, any quantity. H. & S. Honey and Wax Company, Inc., 265-267 Greenwich Street, New York.

FOR SALE—Fancy, well ripened, white sweet clover honey in 6-lb. cans. Extra good quality. Dadant & Sons, Hamilton, Ill.

HONEY PACKERS—Write us for prices on carload lots of California and Western Honeys. We stock all varieties. HAMILTON & COMPANY, 108 West Sixth St., Los Angeles, California.

FOR SALE—5 tons amber honey. Will A. Horst, Crown Point, Indiana.

NEW CROP TUPELO HONEY ready May fifteenth; barrels and 60's. Marks Tupelo Horst, Crown Point, Indiana.

HONEY AND BEESWAX WANTED

WANTED—Carlots honey; also beeswax, any quantity. Mail samples, state quantity and price. Bryant & Cookinham, Inc., Los Angeles, California.

WANTED—Comb, chunk comb, white and light amber extracted honey. Any amount Central Ohio Apiaries, Millersport, Ohio.

WANTED—White and Amber Extracted Honey, any quantity; also beeswax. Write THE FRED W. MUTH CO., Pearl and Walnut Sts., Cincinnati, Ohio.

FOR SALE

BEE SUPPLIES, honey pails and jars. Cash paid for all grades of honey.
A. Tennenhouse, 12213, 12th St. Detroit, Michigan.

FOR SALE—Commercial honey rasing business, 40 outapiaries, 1500 stands, residence, truck with trailer extraction. Box J. H. B., American Bee Journal.

FOR SALE—85 colonies Italian bees and equipment in good condition. Disease free. John Lammers, Fulton, Mo.

FOR SALE—20 Modified Dadant hives complete with drawn combs, sufficient feed, free from disease. K. D. price 1938 catalog. Write Milton J. Rinker, Rippey, Iowa.

BEES FOR SALE—Forty colonies three banded Italians. No disease. $5.50 per colony. 250 supers of wired combs, 8 combs per super, $1.00 each. S. D. Clark, Bayfield, Wisconsin.

SMALL FARM and Apiary in northern Minnesota, well equipped. For information write C. A. Elgstrand, Williams, Minn.

FOR SALE—We accumulate bee supplies at our five warehouses slightly shopworn or fully serviceable but discontinued for lack of sale. Write for complete bargain list. G. B. Lewis Company, Watertown, Wisconsin.

48 COLONIES Italian bees with equipment, Modified Dadant hives, in good condition. Subject to inspection. Harry Thomas, Lakewood, Wis.

FOR SALE: COMPLETE HONEY PROCESSING EQUIPMENT. Send us your inquiries. Consolidated Products Co. Inc., 13-14 Park Row, New York, N. Y.

100 COLONIES of bees and equipment, or without equipment, disease free. My object in selling is my age. All fine brood combs. J. W. E. Basham, Barstow, Texas.

WANTED

MARRIED YOUNG MAN with some experience for 1938 season. Tell all about yourself in first letter. Box 20, care American Bee Journal.

WANTED—Experienced beekeeper. Write complete personal information, references, and wages expected. M. C. Tanquary, 2181 Doswell Avenue, St. Paul, Minnesota.

WANTED—Bees and equipment. Walter Roose, 1627 Main, Sac City, Iowa.

YOUNG MAN 27 wants a ary work. 5 ft. 6, weight 145, ten years' experience. Kenneth Lawrence, Route 1, Reeds, Mo.

THREE EXPERIENCED BEEMEN want work for 1938 season. Prefer West. Can operate large outfit. References. Box 12, care American Bee Journal.

WANTED—Young man, some experience, life job for right man. Dr. Clark, Newell, S. Dak.

SUPPLIES

QUALITY BEE SUPPLIES at money-saving prices. Prompt shipment. We take honey and beeswax in trade. The Hubbard Apiaries, Onsted, Michigan.

DIFFERENT, that's all. Written and published for the instruction of beekeepers. 52 pages of breezy entertaining beekeeping comment each month. One year, $1.00; two years, $1.50. Sample, 3c stamp.
The Beekeepers Item, San Antonio, Texas.

ATTRACTIVE PRICES on bee supplies and comb foundation. Send for catalog. Saves you money. THE FRED W. MUTH CO., Pearl and Walnut Sts., Cincinnati, Ohio.

FOR SALE—Queen mailing cages. Material, workmanship and service all guaranteed. Write for quantity prices.
Hamilton Bee Supply Co., Almont, Mich.

FOR SALE—Comb foundation at money-saving prices. Plain, wired and thin section, wax worked at lowest rates. Combs and cappings rendered. E. S. Robinson, Mayville, N. Y.

$11.00 is our price for working 100 pounds of your wax into medium brood. Our large modern bee hive factory is manned by experienced workers milling thousands of pounds of comb foundation and hundreds of thousands of board feet of lumber into beehives annually. Quality at Low Cost is our motto. Free catalogue. Free shipping tags for your wax. The Walter T. Kelley Co., Paducah, Kentucky.

YOUR WAX WORKED into quality medium brood foundation for 15c pound; 100 pounds $11.00; thin super 22c. For sale medium brood 10 pounds $5.00. Fred Peterson, Alden, Iowa.

PIERCE QUEEN grafting tools and electric uncapping knives. Free illustrated descriptions. 340 Crosby St., Altadena, Calif.

WE SPECIALIZE on metal goods such as tin rabbets, excluders and other items made of metal. Give quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

SAVE MONEY WITH A RIETSCHE FOUNDATION PRESS. WAX WORKED INTO FOUNDATION MEDIUM BROOD 15c LB; 100 LBS. $11.00; THIN SUPER 22c MADE ON NEW ROLLER MILLS.
JOHN STEGEDIRK, HUBBARD, IOWA

READY WIRED FRAMES beat anything you ever saw. Literature free. Sample 10c. A. E. Wolkow, Hartford, Wis.

EXCHANGE

WE EXCHANGE supplies for bees and queens. Dillon, Adrian, Michigan.

CLOSED SEMI-TRAILER, for bees or supplies. Vern Severance, 119 Lexington Ave. S. W., Grand Rapids, Michigan.

MISCELLANEOUS

PLANS FOR POULTRY HOUSES — All styles; 150 illustrations. Tells you the type to build for your particular locality. Secret of getting winter eggs, and copy of "Inland." Send 25c.
Inland Poultry Journal, Spencer, Indiana.

BOOK BARGAIN—Very slightly damaged copies of Beekeeping in the South by Kenneth Hawkins, cloth bound, published to sell at $1.25, price postpaid only 29 cents.
American Bee Journal, Hamilton, Ill.

THE BEE WORLD—The leading bee journal in Great Britain and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy, post free, 12 cents stamps. Membership of the Club, including subscription to the paper, 10/6. The Apis Club, The Way's End, Foxton, Royston, Herts, England.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so, send us a list.
American Bee Journal, Hamilton, Illinois.

BARGAIN—GLASS JARS—200 cases 2 dozen Fluted glass jars, capacity 3½ oz. honey, with screw caps, at 33c per case.
Dadant & Sons, Hamilton, Illinois.

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, "Il Systema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price $1.00.

CALIFORNIA PACKAGE BEES

Including Select, Young, Laying Italian Queens. Shipment by express or Parcel Post. Lowest transportation charges and quickest delivery.

FREE: Descriptive circular and Illustrated Booklet with directions for the installation and care of package bees

PRICES—2 Lb. package and queen	$2.45
3 Lb. package and queen	3.15
Queens, each	.75

Discount to dealers and on large orders

J. E. WING, COTTONWOOD, CALIFORNIA

St. Romain's "Honey Girl" Italians

A Gentle, Thrifty and Reliable Strain

Combless Packages
2-lbs. Bees and Queen ... $2.45
3-lbs. Bees and Queen ... 3.15
4-lbs. Bees and Queens ... 3.85

2-lbs. Bees, 2-frames brood with queen $3.60
For each additional comb of brood add 65 cents.
For each additional pound of bees add 70 cents.

DISCOUNT TO DEALERS

We guarantee prompt service, safe delivery, no disease; Louisiana State Department of Agriculture inspection certificate, certifying freedom from disease with each shipment. "St. Romain's Honey Girl" Italians are known throughout the United States and Canada for their gentleness, hardiness, and productivity.
Book your order in advance. Circular Free.

St. Romain's "Honey Girl" Apiaries, Hamburg, La.

Koolairy Bee Veil. Best yet, and most convenient to use.
POSTPAID $1.50

"She-Suits-Me" Queens

Light-3-banded stock, linebred for 25 years. None better. One queen **75 cents, 3 for $2.00.** Write for prices on quantity lots. Stamps accepted for single queen orders. Season begins May 20.

ALLEN LATHAM
Norwichtown, Conn.

Did you ever try the SAFIN cage for introducing your queens? **15c postpaid, 10 for $1.00.**

The koolairy veil will always be used when once tried. The easiest, most comfortable veil ever contrived.

Your Display or Classified Ad in A-B-J Brings Results That Please

The Postscript

Gossip About the Office in the Making of the Magazine

Referring to coriander, J. E. Pate, of Mayflower, Arkansas, writes: "We have never grown coriander commercially but it grows beautifully for us. Bees do go a bit frantic over the blossoms, but we have never had enough of it to make a difference in the honey yield."

In view of published statements that more than a million pounds of seed are imported one would expect to find it grown commercially somewhere in this country. We are a bit puzzled as to who uses so much of the seed and for what purpose.

———ABJ———

Newspaper reports credit Dr. L. M. Christensen, of the Chemical Foundation, of Kansas, with the statement that grasshoppers are killed by eating the foliage of castor beans. Cases are cited where crops were protected from these pests by planting a border of castor beans around the plots cultivated. If the control of grasshoppers is as simple as that, there is likely to be a big demand for seed of castor beans in the grasshopper territory.

———ABJ———

A letter from central Missouri states that the red clover seed situation is very bad. The writer hulled forty acres of good stand to get about 400 pounds of seed. He told of another case where only 200 pounds were secured from twenty acres. A yield of ten pounds of seed per acre offers but little inducement to harvest. He blames the short crops to lack of bees.

The yield of seed of the Zofka red clover in our little test plot was more than ten per cent of the gross weight of the hay as fed to the machine. At this rate clover which yielded a ton and a half of hay per acre would yield 300 pounds of seed.

———ABJ———

With reference to the many unfavorable reports received from the samples of seed of the blue flowered sweet clover, **(Trigonella)** sent out from this office, Xavier Widmer, of Medford, Oregon, writes that it succeeds on sandy soils but not on others. Perhaps this may account for the fact that a few favorable reports have come in. The small amount of seed which we secured for trial this season has been distributed and **no more is available.** We would like further reports from those testing it this season, especially as to kind of soil on which it is planted.

———ABJ———

The appearance of the new catalog of Texas plants recently issued by the experiment station of that state is of special interest to me because of having been on an extended field trip with H. B. Parks along the Mexican border. Parks is a tireless naturalist and few men have his vast store of knowledge concerning the plants of any region. A companion volume, "Valuable Plants Native to Texas," is soon to be issued.

———ABJ———

Recent mention of Alyce clover, a new plant grown in the Florida orange groves to provide humus and nitrogen, has raised the question as to its value for the bees. Letters have come to me concerning it from three different sources but none of them indicate that it is a honey plant. It comes from the tropics and is not adapted to any but the warmest portions of our country. Crotalaria, which is commonly grown as a soiling crop in Florida, does provide some bee pasture.

———ABJ———

E. M. Cole, of Audubon, Iowa, writes that Iowa had the driest fall and winter up to January first ever known. He reports that nearly all last summer's seeding of sweet clover is reported killed by the dry weather. Record breaking warm weather in early February stimulated activity among the bees with consequent danger to stores. A portion of western Iowa and much of Nebraska missed the rains so generously provided elsewhere with consequent poor prospects for the immediate future.

FRANK C. PELLETT.

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Quality Bred Italians Same Price

Time is moving fast and waits for no one. How about your plans for the season? General reports indicate more favorable prospects for the honey producer than in some time. Will you be ready? This should be given much thought to determine your requirements and the placing of your order early for the advantages. Whether your order is for one package of bees, a thousand or several thousand, we are prepared to serve you better than ever before with highest quality, full weights and dependable service. Place your order now without further delay for shipping date wanted.

We supply thousands of packages of bees year after year to same customers and can please you in every regard. Be convinced by placing your order now for better value and service. Safe arrival and satisfaction guaranteed.

Select young laying queens	$ .75 each, any number
Tested queens	1.50 each, any number
2-Lb. packages bees with queens	2.45 each, any number
3-Lb. packages bees with queens	3.15 each, any number
4-Lb. packages bees with queens	3.85 each, any number
Packages without queens, deduct price of queens.	
15% Discount from above prices to dealers.	

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